

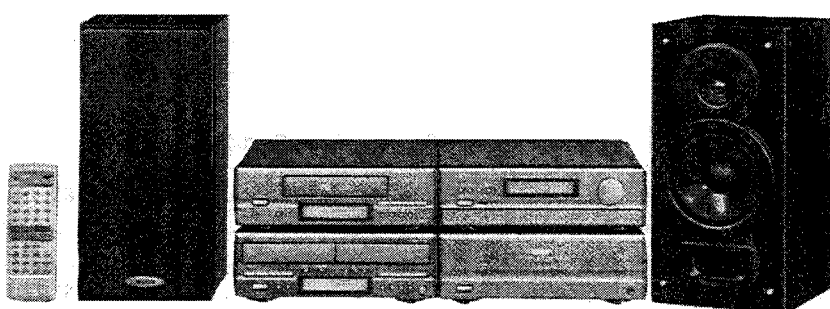
DENON

Hi-Fi Personal Component System

SERVICE MANUAL

PERSONAL COMPONENT SYSTEM

UNIT No. UCD-250 (Compact Disc Player)



COMPACT
disc
DIGITAL AUDIO

• The D-250 Personal Component System consists of the following:

Power Amplifier	UPO-250
MW, LW, FM Tuner /	UTP-250
Pre Amplifier Section	
Remote Control Unit	RC-154
Cassette Deck Section	UDRW-250
CD player Section	UCD-250

MAIN FEATURES

- **AM/FM 30-station random preset tuner**
Random presetting permits easy operation and will be convenient for the increased number of FM stations in the future.
- **Independent power amplifier designed for quality sound**
High quality 50 W per channel power amplifier with large speaker terminals.
- **New SDB control**
The Super Dynamic Bass control circuit delivers clear bass sound.
- **Super linear converter and high performance digital filter**
Denon's unique systems for preventing loss of CD sound quality permit excellent sound field reproduction.
- **Editing circuit**
Automatic selection of CD tracks for minimum blank space on the tape when recording.
- **Dolby B, C and HX PRO circuits**
For high quality sound in playback and recording.
- **CD SRS circuit**
CDs can be recorded at the touch of a button.
- **Easy-to-use remote control unit**
- **Auto on/off function**
This function switches on the power with just a press of the CD or cassette deck play button. The power is switched off about 10 minutes after playback has finished.

BEFORE USING

- **Moving the system**
To prevent short-circuiting or damage of connection cords, be sure to unplug the power cord and disconnect all connection cords before moving the system.
In addition, always remove CDs before moving the system. If not, the CD may be scratched.
- **Before turning the power on**
Check again that all connections are proper and that the connection cords are not damaged. Always set the power switch to the STANDBY position before disconnecting connection cords.
- Humming may be produced if the system is set near a TV set or other audio component or its connection cords. If this happens, try changing the position of the equipment and connection cords.
- Do not move the system abruptly from a cold place to a warm place, as this may cause dew (water droplets) to form in the set, preventing proper operation. If this happens, wait one hour before using the system.
- **Be sure to keep this manual**
The illustrations used in this manual may differ from the actual system.

Check that the following parts are included in the package aside from the main unit:

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④ Remote Controller	1
⑤ R6P/AA batteries	2
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NIPPON COLUMBIA CO., LTD.

GENERAL SECTION

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Tuner Pre-Amp Unit	UTP-250	1S
Power Amplifier Unit	UPO-250	1S
CD Player Unit	UCD-250	1S
Cassette Deck Unit	UDRW-250	1S
Top Cushion	503 1002 001	1
Top Spacer	502 0763 018	1
Top Spacer	502 0763 034	1
Space Cushion	502 9124 001	2
(Master) Carton	501 1626 012	1
Envelope Sub Assy		1S
Envelope	505 8006 019	1
Notice Sheet	515 0601 008	1
Inst. Manual	511 2421 006	1
Loop Antenna	231 0922 009	1
Remocon (RC-154)	499 0228 008	1
FM Ant. Ass'y	395 0019 025	1
Envelope Sub Ass'y		1S
Envelope	505 9119 002	1
Output Cord Ass'y	009 9022 015	2

SPECIFICATIONS

- **Tuner-preamplifier (UTP-250)**
 - Reception Frequency Range:** FM: 87.50 MHz to 108.00 MHz
AM: 522 kHz to 1611 kHz (MW), 153 kHz to 279 kHz (LW)
 - Receiving Sensitivity:** FM: 1.5 μ V, 75 ohms (SN ratio 30 dB)
AM: 20 μ V (SN ratio 20 dB, MW), 35 μ V (SN ratio 20 dB, LW)
 - FM Stereo Separation:** 40 dB (1 kHz)
 - Bass Adjustment:** 100 Hz \pm 8 dB
 - Treble Adjustment:** 10 kHz \pm 8 dB
 - Super Dynamic Bass:** 80 Hz \pm 8 dB
 - Jacks:** PREOUT: Output jacks
PHONO: Input jacks
DAT: Input jacks, recording output jacks
Processor: Processor input/output jacks
 - Dimensions (max.):** 270 (W) \times 86 (H) \times 330 (D) mm (10-5/8" \times 3-25/64" \times 13")
 - Weight:** 3.2 kg (7 lbs 10 oz)
 - Power Supply:** AC 230 V, 50Hz, AC 240 V, 50Hz (for U.K. model)
 - Power Consumption:** 18 W
 - **Amplifier (UPO-250)**
 - Rated Output Power:** 50 W + 50 W (20 Hz to 20 kHz, 8 ohm)
 - Jacks:** 6.3 mm headphone jack
 - Dimensions (max.):** 270 (W) \times 96 (H) \times 330 (D) mm (10-5/8" \times 3-25/32" \times 13")
 - Weight:** 4.1 kg (9 lbs 1 oz)
 - Power Supply:** AC 230 V, 50Hz, AC 240 V, 50Hz (for U.K. model)
 - Power Consumption:** 140 W
 - **CD Player (UCD-250)**
 - Wow and Flutter:** Below measurable limits (\pm 0.001% W. Peak)
 - Sampling Frequency:** 44.1 kHz
 - Light Source:** Semiconductor
 - Dimensions (max.):** 270 (W) \times 86 (H) \times 313 (D) mm (10-5/8" \times 3-25/64" \times 12-21/64")
 - Weight:** 3.1 kg (6 lbs 11 oz)
 - Power Supply:** AC 230 V, 50Hz, AC 240 V, 50Hz (for U.K. model)
 - Power Consumption:** 15 W
 - **Cassette Deck (UDRW-250)**
 - Type:** Horizontal 4-track, 2-channel auto reverse stereo cassette deck
 - Heads:** 1 hard permalloy recording/playback head, 1 hard permalloy playback head, and 1 double-gap ferrite erase head
 - Tape Speed:** 4.75 cm/s
 - Noise Reduction Circuits:** Dolby B and C NR
 - Usable Tapes:** Normal, chrome, and metal tapes
 - Dimensions (max.):** 270 (W) \times 96 (H) \times 318 (D) mm (10-5/8" \times 3-25/32" \times 12-33/64")
 - Weight:** 4.4 kg (9 lbs 11 oz)
 - Power Supply:** AC 230 V, 50Hz, AC 240 V, 50Hz (for U.K. model)
 - Power Consumption:** 18 W
 - **Remote Control Unit (RC-154)**
 - Type:** Infrared pulse
 - Number of Buttons:** 41 (including 1 slide switch)
 - Dimensions (max.):** 60 (W) \times 177 (H) \times 18 (D) mm (20-23/64" \times 6-31/32" \times 45/64")
 - Weight:** 130 g (Approx. 6.4 oz) (including batteries)
- * Maximum dimensions include controls, jacks, and covers. (W) = width, (H) = height, (D) = depth
- For improvement purposes, specifications and functions are subject to change without advanced notice.

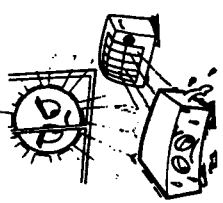



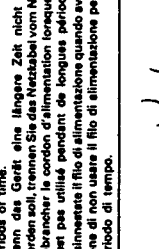
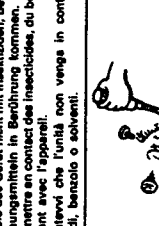
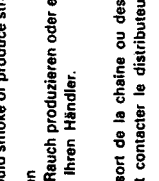
ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING, NÅR
SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION.
UNDGÅ UDSAETTELSE FOR STRÅLING.

VARO! AVATTAESSA JA SUOJALUKITUS OHITETTAESSA
OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.
ÄLÄ KATSO SÄTEESEEN.

VARNING - OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR
ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA
EJ STRÅLEN.

GENERAL SECTION

NOTE ON USE/HINWEISE ZUM GEBRAUCH/OBSERVATIONS RELATIVES A L'UTILISATION/NOTE SULL'USO

 <ul style="list-style-type: none"> • Avoid high temperatures. Allow for sufficient heat dispersion when installed on a rack. • Vermeiden Sie hohe Temperaturen. Beachten Sie, daß eine ausreichende Luftzirkulation gewährleistet wird, wenn das Gerät auf ein Regal gestellt wird. • Éviter des températures élevées. Eviter compte d'une dispersion de chaleur suffisante lors de l'installation sur une étagère. • Evitare di esporre l'unità a temperature alte. Assicurarsi che ci sia un'adeguata dispersione del calore quando si installa l'unità in un mobile per componenti audio. 	 <ul style="list-style-type: none"> • Keep the set free from moisture, water, and dust. Halten Sie das Gerät von Feuchtigkeit, Wasser und Staub fern. • Protéger l'appareil contre l'humidité, l'eau et la poussière. • Tenete l'unità lontana dall'umidità, dall'acqua e dalla polvere. 	 <ul style="list-style-type: none"> • Do not let foreign objects in the set. Keine fremden Gegenstände in das Gerät kommen lassen. • Ne pas laisser des objets étrangers dans l'appareil. • È importante che nessun oggetto è inserito all'interno dell'unità. 	 <ul style="list-style-type: none"> • Handle the power cord carefully. Gehen Sie vorsichtig mit dem Netzkabel um. Halten Sie das Kabel am Stecker, wenn Sie den Stecker herausziehen. • Manipuler le cordon d'alimentation avec précaution. Tenir la prise lors du débranchement du cordon. • Maneggiare il filo di alimentazione con cura. Agire per la spina quando scollegate il cavo dalla presa. 	 <ul style="list-style-type: none"> • Unplug the power cord when not using the set for long periods of time. Wenn das Gerät eine längere Zeit nicht verwendet wird, ziehen Sie das Netzkabel vom Netzstecker. Débranchez le cordon d'alimentation de l'appareil n'et pas utilisé pendant de longues périodes. • Disinnestare il filo di alimentazione quando avete l'intenzione di non usare il filo di alimentazione per un lungo periodo di tempo. 	 <ul style="list-style-type: none"> • Do not let insecticides, benzene, and thinner come in contact with the set. Lassen Sie das Gerät nicht mit Insektiziden, Benzin oder Verdünnungsmitteln in Berührung kommen. • Ne pas mettre en contact des insecticides, du benzène et un diluant avec l'appareil. • Assicurarsi che l'unità non venga in contatto con insetticidi, benzolo o solventi. 	 <ul style="list-style-type: none"> • Never disassemble or modify the set in any way. Versuchen Sie niemals das Gerät auseinander zu nehmen oder auf jegliche Art zu verändern. • Ne jamais démonter ou modifier l'appareil d'une manière ou d'une autre. • Non smontare mai, né modificate l'unità in nessun modo.
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SAFETY IMPORTANT

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

(UTP-250 only)

IMPORTANT
(BRITISH MODEL ONLY)

The wires in this mains lead are coloured in accordance with the following code:

Blue: Neutral
Brown: Live

The colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows.

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

CLASS 1 LASER PRODUCT
LASERSTRÄHLUNGSKLASSE 1
KLASS 1 LASERAPPARAT

ADVARSEL:
UVENLIG LASERSTRÅLING VED ÅBNING. NÅR SKRUEDEKAPSELVENDRE ER UDE AF FUNKTION. UNDDÅ UDBÅTTELSE FOR STRÅLING.

VAROITUS:
LÄITTEEN KÄYTTÄMÄNNEN MUULLA KUIN TÄSSÄ KÄYTTÖOHJEESSA MAINITTULLA TAVALLA SAATTAÄ KÄYTTÖÄ KÄYTTÄMÄN TUURALLISUUDEN TÄLLÄ YLLÄTÄVÄLLÄ KÄYTTÄMÄN LASERSTRÄLLE.

VARNING:
OMI APPARAATEN AVANNOIS PÄ ANNAV SÄTT ÄN I DENNA ANVÄNDNINGEN BEHÖRIGT. LÄN ANVÄNDNAREN UTSLÄTTAS FÖR ÖVERLIG LASERSTRÅLNING SOM ÖVERSKRIDER GRÄNSEN FÖR LASERKLASS 1.

"CLASS 1
LASER PRODUCT"



Irregularities

- If the system should smoke or produce strange smells, immediately set the power switch to the STANDBY position, unplug the power cord, and contact your store of purchase.

Unregelmäßigkeiten

- Sollte das Gerät Rauch produzieren oder eigenartig riechen, stellen Sie den Netzschalter sofort auf die Position STANDBY (Bereitschaft), ziehen Sie den Netzstecker heraus und kontaktieren Sie Ihren Händler.

Anomalies

- Si de la fumée sort de la chaîne ou des odeurs bizarres, placer l'interrupteur d'alimentation immédiatement sur la position de veille (STANDBY), débrancher le cordon d'alimentation et contacter le distributeur.

Irregolarità

- Qualora il sistema dovesse produrre del fumo o degli odori strani, collocare immediatamente l'interruttore di accensione nella posizione STANDBY, disinnestare il filo di alimentazione e rivolgervi al negozio dell'acquisto.

"SERIAL NO.

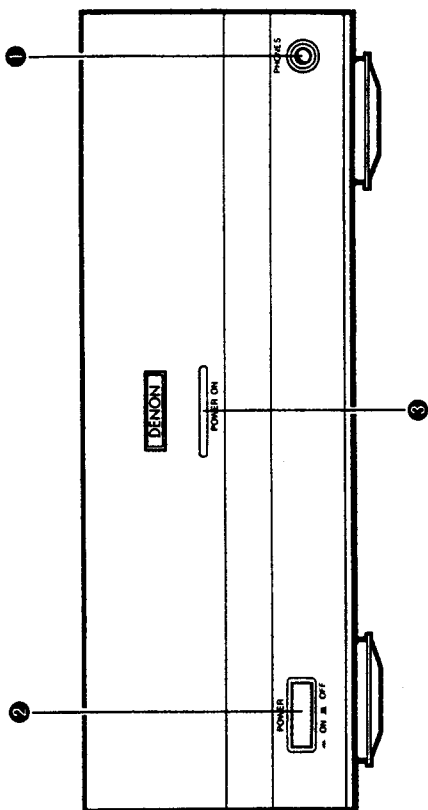
PLEASE RECORD UNIT SERIAL NUMBER ATTACHED TO THE REAR OF THE CABINET FOR FUTURE REFERENCE"

GENERAL SECTION

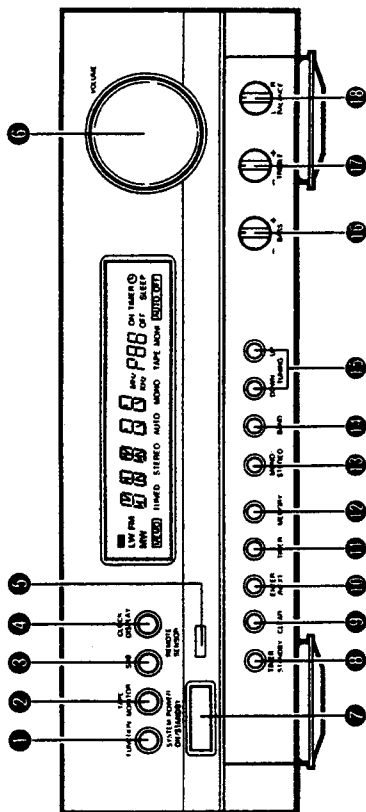
3

FRONT PANEL/FRONTPLATTE/PANNEAU AVANT/PANNELLO ANTERIORE

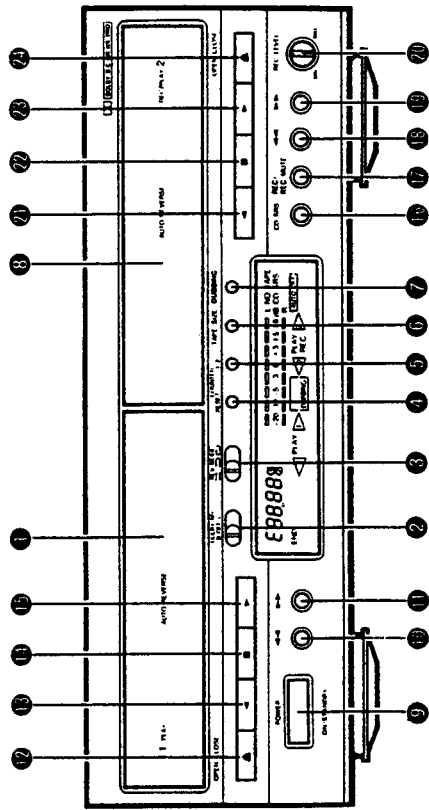
POWER AMPLIFIER
LEISTUNGSVERSTÄRKER
AMPLIFICATEUR DE PUISSANCE
AMPLIFICATORE DI POTENZA



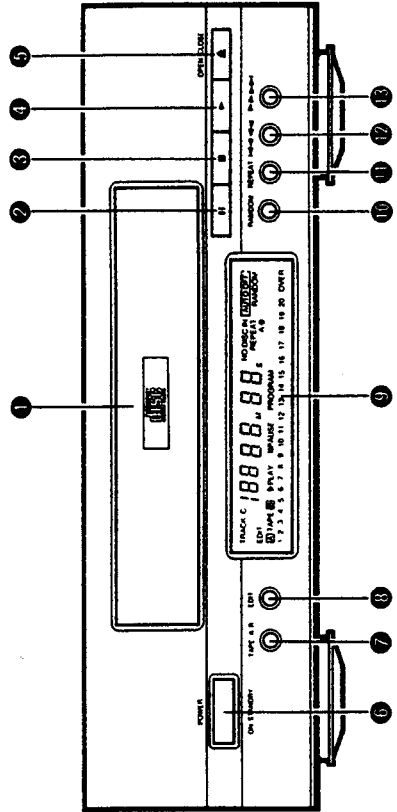
TUNER-PREAMPLIFIER
TUNER-VORVERSTÄRKER
TUNER-PREAMPLIFICATEUR
SINTONIZZATORE-PREAMPLIFICATORE



CASSETTE DECK
CASSETTENECK
PIATINE CASSETTE
PIASTRA A CASSETTE



CD PLAYER
CD-SPIELER
LECTEUR CD
DISPLAY DELLA PIASTRA A CASSETTE



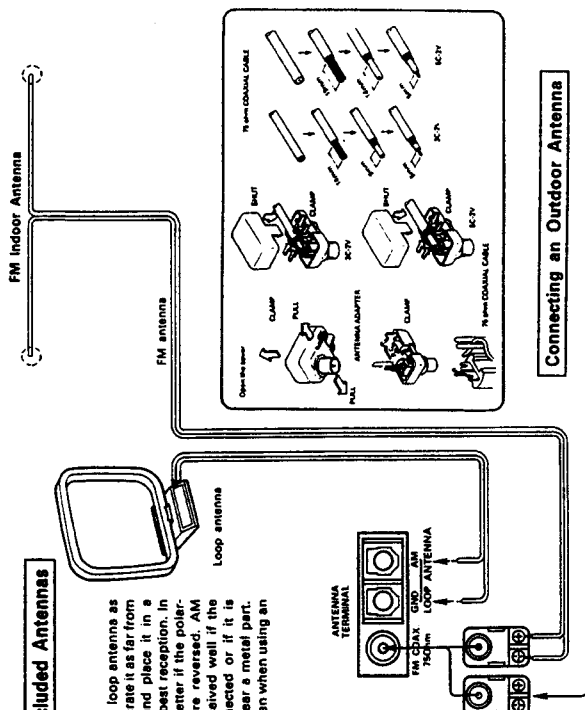
- As an aid to better understanding the operation method, the illustrations used in this manual may differ from the actual system.
- Als Hilfestellung zum besseren Verständnis der Betriebsmethode, erlauben wir uns den Hinweis, daß sich die Abbildungen in dieser Bedienungsanleitung leicht von dem aktuellen System unterscheiden.
- Pour faciliter la compréhension de la méthode de fonctionnement, les illustrations utilisées dans ce manuel peuvent être différentes de celles de la chaîne réelle.
- Per rendere la spiegazione del metodo operativo più facile, le illustrazioni usate in questo libretto delle istruzioni possono differire dal sistema stesso.

GENERAL SECTION

3 ANTENNA CONNECTIONS

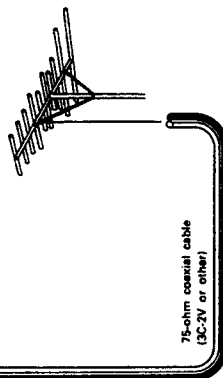
Connecting the Included Antennas

AM Loop Antenna
Assemble the included AM loop antenna as shown in the diagram, separate it as far from the system as possible, and place it in a position that provides the best reception. In some cases, reception is better if the polarities of the connections are reversed. AM broadcasts will not be received well if the loop antenna is not connected or if it is connected but is located near a metal part. Attach the loop antenna even when using an outdoor AM antenna.



Connecting an Outdoor Antenna

Use an outdoor antenna if reception cannot be heard clearly with the included antenna. Change the location, height, and direction of the antenna to find the position of best reception, then fix the antenna in that position.

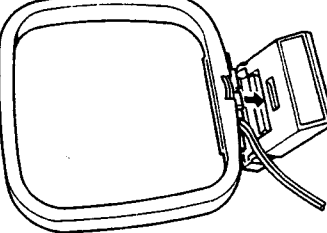


Connect the outdoor antenna using 75-ohm coaxial cable. This will help shield the antenna from external noise.

Places for Installing Outdoor Antennas

- Install the outdoor antenna facing a broadcast station's transmission antenna.
- When surrounded by buildings or hills, place the antenna in the location which provides best reception and try changing the direction of the antenna to obtain optimum reception.
- Do not install the antenna under power lines. It is extremely dangerous for the antenna to come into contact with a power line.
- Install away from roads and train tracks to prevent noise from cars and trains.
- Do not install the antenna too high, as it may be hit by lightning.

Assembling the Loop Antenna



- Remove the tie fastening the loop antenna's lead and connect the lead to the antenna terminals.

Separate the FM and AM antenna wires from the system connector wires.

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Check that the following parts are included in the package aside from the main unit:

- Operating Instructions
- FM Antenna
- AM Loop Antenna
- Remote Controller
- R6P/AA Batteries
- System Connectors 1 & 2
- FM Antenna Adaptor
- Pin Plug Cords

1 MAIN FEATURES

- AM/FM 30-station random preset tuner**
Random presetting permits easy operation and will be convenient for the increased number of FM stations in the future.
- Independent power amplifier designed for quality sound**
High quality 50 W per channel power amplifier with large speaker terminals.
- New SDB control**
The Super Dynamic Bass control circuit delivers clear bass sound.
- Super linear converter and high performance digital filter**
Denon's unique systems for preventing loss of CD sound quality permit excellent sound field reproduction.
- Editing circuit**
Automatic selection of CD tracks for minimum blank space on the tape when recording.
- Dolby B, C and HX PRO circuits**
For high quality sound in playback and recording.
- CD SRS circuit**
CDs can be recorded at the touch of a button.
- Easy-to-use remote control unit**
- Auto on/off function**
This function switches on the power with just a press of the CD or cassette deck play button. The power is switched off about 10 minutes after playback has finished.

2 BEFORE USING

Note the following points before using the D-250.

- Moving the system**
To prevent short-circuiting or damage of the connection cords, be sure to unplug the power cord and disconnect all connection cords before moving the system.
- In addition, always remove CDs before moving the system.**
Failing to do so may result in scratched CDs.
- Before switching on the power**
Check again that all connections are proper and that the connection cords are not damaged. Be sure to disconnect the power plug before disconnecting or connecting the connection cords.
- Hum may be produced if a TV set or another audio component is set near this system or their connection cords are nearby.** If this happens, try changing the position of the equipment and connection cords.
- Do not move the system abruptly from a cold place to a warm place, since this may cause water droplets (condensation) to form in the equipment, preventing proper operation.** If this happens, wait one hour before using the system.

4 CONNECTIONS

AC OUTLET
Always connect the amplifier's (UPO-250) power cord to this AC outlet.

- **SWITCHED** (total capacity of 370 W)
The power of this outlet is switched on and off with the tuner's power switch.
- **UNSWITCHED** (total capacity - 110W)
The power is supplied to these outlets regardless of whether or not the tuner's power switch is turned on or off.

Plug the power cords of the CD player and cassette deck into these outlets.

MONO OUT jack
Jack for connecting a subwoofer (super woofer) with built-in amplifier.

Power plug
AC 230 V 50 Hz
AC 240 V 50 Hz (for U.K. model)
(Plug into a power outlet)

Power cord
(for U.K. model)

These jacks are for connecting the exclusive surround processor. For instructions on connections, refer to the surround processor's manual.

FM antenna
Refer to Page 4.

AM loop antenna

Keep the FM and AM antenna wires away from the system connector wires to prevent noise from entering the antennas.

- Do not plug the power cord into the outlet until all connections have been completed. Connect properly, as illustrated in the diagram.
- Check the left and right channels, then properly connect the left speaker's terminals to the amplifier's L terminals and the right speaker's terminals to the amplifier's R terminals.
- Insert the plugs securely. Incomplete connections can cause noise.
- When the power cord has been disconnected from the power outlet, wait about 5 seconds before plugging it back in.
- Use the AC OUTLET to plug in the amplifier CD and Cassette deck. Never use it for other appliances, such as hair driers, etc.
- Note that grouping connection cords (pin-plug cords) together with power cords or setting them near power transformers can cause hum or other noise.
- Note that if the Input jacks selected with the FUNCTION button are open (if a component is not connected), there might be leakage of the reproduced sound of a component connected to another set of input jacks.

NOTE:
This system includes digital circuitry which may interfere with the colors on a TV. Should this occur, switch off the power of the unused components.

USC-250
(Left channel)
(Right channel)

Speaker system connections
Connect the speaker system for the left channel (the left side as seen from the front) to the L terminals, and the speaker system for the right channel to the R terminals.

Record Player (Option)

The sets can also be placed next to one another.

NOTE:
System operation is not possible and the power cannot be turned on and off unless all system connector cords and pin-plug cords are connected.

GENERAL SECTION

CASSETTE DECK

- 1 **Cassette tray: Deck 1**
The cassette tray opens outward when the OPEN/CLOSE button is pressed. Insert the cassette tape with the side on which the tape is exposed facing away from you. To close the cassette tray, press the OPEN/CLOSE button again.
- 2 **DOLBY NR selection switch**
Use this switch to select the Dolby NR mode: off, B type or C type. During playback, set this switch to the same mode in which the tape was recorded.
- 3 **REV MODE switch**
Use this switch to set the reverse mode to one of the following modes: (single side mode), (two-side mode), or (continuous mode). Refer to Page 13 for details.
- 4 **COUNTER RESET button**
Press this button to reset the tape counter to 00.00.
- 5 **COUNTER 1/2 selection button**
Use this button to change the counter display between deck 1 and deck 2.
- 6 **TAPE SIZE setting button**
Set the time of the tape to the length of the tape being used. Refer to Page 8 for details.
- 7 **DUBBING button**
Simply pressing this button permits dubbing (copying) a tape from deck 1 to deck 2.
- 8 **Cassette tray: Deck 2**
The cassette tray opens outward when the OPEN/CLOSE button is pressed. Insert the cassette tape with the side on which the tape is exposed facing away from you. To close the cassette tray, press the OPEN/CLOSE button again.
- 9 **POWER ON/STANDBY switch**
This switch turns the power of the cassette deck on and off.
- 10 **◀ (rewind) button: Deck 1**
Press this button to rewind the tape in deck 1. Also, if pressed during playback in the ▶ (forward) direction, the tape is rewound to the beginning of the currently playing selection. If pressed during playback in the ◀ (reverse) direction, the tape is forwarded to the beginning of the next selection (on the back side of the tape).
- 11 **▶ (fast-forward) button: Deck 1**
Press this button to fast forward the tape in deck 1. Also, if pressed during playback in the ▶ (forward) direction, the tape is fast forwarded to the beginning of the following selection. If pressed during playback in the ◀ (reverse) direction, the tape is rewound to the beginning of the next selection (on the back side of the tape).
- 12 **▶ (fast-forward) button: Deck 2**
Press this button to fast forward the tape in deck 2. Also, if pressed during playback in the ▶ (forward) direction, the tape is fast forwarded to the beginning of the following selection. If pressed during playback in the ◀ (reverse) direction, the tape is rewound to the beginning of the next selection (on the back side of the tape).
- 13 **REC LEVEL (recording level) control**
Use this control to set the recording level.
- 14 **◀ (reverse play) button: Deck 2**
Press this button to begin playback in the reverse direction on deck 2. When this button is pressed in the standby condition, the power is automatically switched on and the deck plays.
- 15 **■ (stop) button: Deck 2**
Press this button to stop the moving tape in deck 2.
- 16 **▶ (forward play) button: Deck 2**
Press this button to begin playback in the forward direction on deck 2. When this button is pressed in the standby condition, the power is automatically switched on and the deck plays.

- 1 **Power indicator LED**
This LED will flash for about 5 seconds until the speaker relay goes on, then it will light steadily. The LED will also flash when the protection circuit is activated. Should this occur, switch the power off, check the speaker connections, then switch the power on again.
- 2 **ENTER/NEXT button**
This is used when setting the timer, setting the current time, and when advancing to the next operation.
- 3 **TIMER button**
This is used to set the timer.
- 4 **MEMORY button**
This button is used when presetting FM, MW and LW stations.
- 5 **MONO/STEREO (FM stereo mute/mono) button**
This button will not function when receiving MW/LW broadcasts.
(For FM reception) Use this mode to receive FM broadcasts in stereo.
(For MW/LW reception) ("AUTO" appears on the display.) The muting circuit is activated to cut the hiss noise between stations.
MONO: In this mode, FM broadcasts are received in monaural, regardless of whether they are broadcast in monaural or stereo.
Set to the mono mode if there is much noise in the stereo mode (with "AUTO" displayed) or if the signals are weak.
- 6 **BAND (FM/MW/LW selection) button**
With each press, the band is switched in the order of FM, MW, LW, FM, and so on.
- 7 **TUNING UP and DOWN buttons**
Use these to tune in FM, MW or LW stations and when setting the clock and timer.
- 8 **BASS control**
Use this control to adjust the bass.
- 9 **TREBLE control**
Use this control to adjust the treble.
- 10 **BALANCE control**
Use this control to adjust the balance of the volume between the left and right channels. The volume is the same for the left and right channels when the control is at the center.
- 11 **PHONES jack**
When using headphones, plug them in here. The sound from the speakers is cut when headphones are plugged in.
- 12 **POWER switch**
When pressed once, the power is switched on and the power indicator LED lights up. This switch is usually left on.
- 13 **FUNCTION button**
Use this to select the program source. The selection changes in the order of TUNER, TAPE, CD, PHONO, and DAT.
- 14 **TAPE MONITOR button**
Use this to listen to the sound of the tape. When used with a 3-head tape deck, the sound can be monitored while recording.
- 15 **SDB (Super Dynamic Bass) button**
Press this button for more powerful bass sound.
- 16 **CLOCK/DISPLAY button**
This button switches the display to the reception frequency or the function display and time display.
- 17 **Remote control sensor**
The remote control unit is pointed toward this sensor and operated.
- 18 **VOLUME control**
This control adjusts the overall volume. Turn clockwise (↻) to increase the volume, counterclockwise (↺) to decrease it.
- 19 **SYSTEM POWER button**
(This switch can switch on the power for the entire system.) Press to switch the power on, press again to put the system into standby.
- 20 **TIMER STANDBY button**
Press this button to cause the timer to operate at the set time. When the timer has been set, pressing this button will light up the display's timer standby indicator (⏻), and pressing it again will switch off the standby indicator. The timer will not function when the standby indicator is off.
- 21 **CLEAR button**
This button is used to change the current time setting or the contents of the set timer.

5 PART NAMES AND FUNCTIONS

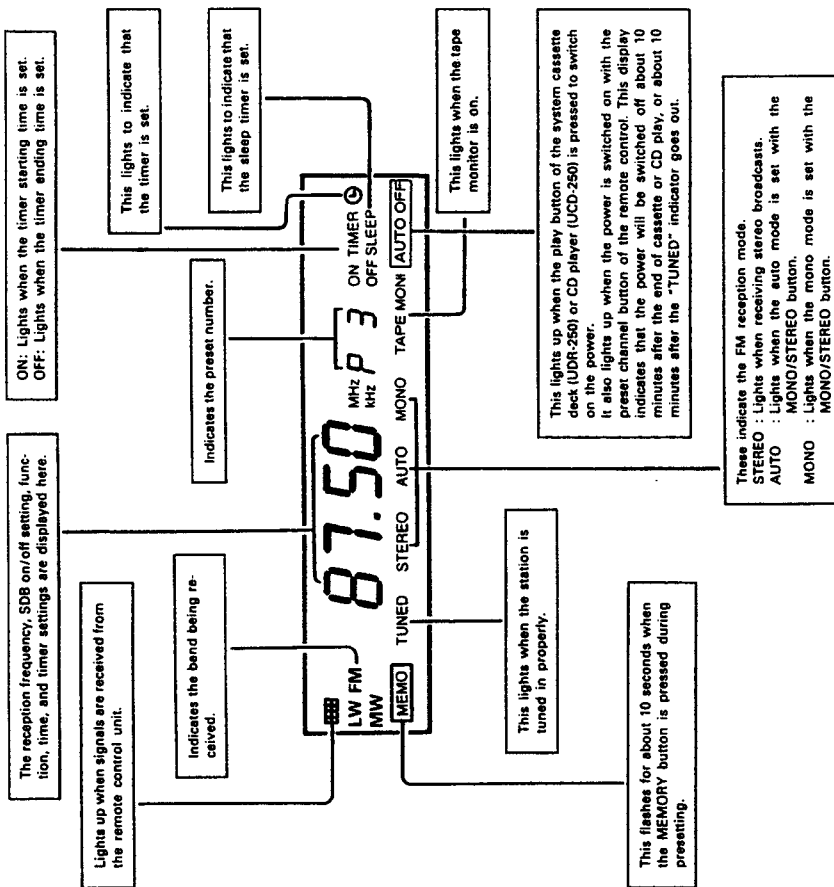
POWER AMPLIFIER

TUNER-PREAMPLIFIER

GENERAL SECTION

7

TUNER-PREAMPLIFIER DISPLAY



NOTE:

- The "ON" of the timer standby display will not light up unless the current time and the timer have been set.
- When the FUNCTION button is used to switch the function while "AUTO OFF" is lit, the auto on/off mode is cancelled and the display goes out.
- Also note that when the play button of one of the components (CD player or cassette deck) is pressed while "AUTO OFF" is lit, causing the function to change, the auto on/off mode will not be cancelled and the display will remain lit.

Trap Door

- To open the trap door, press area of the PUSH OPEN Δ indication at the upper right of the panel. When the door lock is released, open the door with Your hand.
- To close the trap door, press the indicated area at the upper right of the panel and lock the door.

- 2 **▲ OPEN/CLOSE button: Deck 2**
Press this button to open and close the cassette tray. The button also works in the standby condition.

- Deck 1 is for playback only and deck 2 is for recording and playback.
- After the power cord is plugged into an outlet, a mechanical sound is produced from the cassette deck when the power switch is pressed on the first time only. This is the sound of the cassette mechanism being set to the proper operating position, and is not a problem with the deck.

CD PLAYER

- 1 Disc tray**
Compact discs are loaded to the disc tray.
- 2 II Pause button**
Press this button to stop CD play temporarily.
Press the play button to resume CD play.
- 3 ■ Stop button**
Press this button to stop CD play.
- 4 ▶ Play button**
Press this button to start playing the disc. If pressed when the disc tray is open, the disc tray closes and playback begins. Pressing this button in the standby mode automatically switches on the power and plays the disc.
- 5 ▲ OPEN/CLOSE button**
Press this button to open the disc tray. Press once to open the disc tray forward, then press again to close the disc tray. This button also operates in the standby mode.
- 6 POWER ON/STANDBY switch**
Press this to switch the CD player's power on and off.
- 7 TAPE A/B button**
Press this button during editing to switch the display between the display of program contents for tape side A and the display for tape side B.

- 8 EDIT button**
Press this button for edited recording (dividing the tracks to be recorded to fit onto sides A and B of a tape according to the length of the tape).
 - 9 Display**
This displays the time and the settings of the various buttons.
 - 10 RANDOM button**
Press this button to play the disc tracks in random order.
 - 11 REPEAT button**
Press this button for repeat play.
 - 12 44 44 (automatic/manual search backward button)**
Press this button to move the pickup back to the beginning of the desired track.
Press in the play, stop, or pause mode to move back a number of tracks equal to the number of times the button is pressed.
 - 13 44 44 (automatic/manual search forward button)**
Press this button to move the pickup forward to the beginning of the desired track.
Press in the play, stop, or pause mode to move forward a number of tracks equal to the number of times the button is pressed.
- * The automatic search function is set if button ② or ③ is released within 0.5 seconds, and the manual search function is set if the button is held in for more than 0.5 seconds.
- * Buttons ② and ③ do not function in the pause mode.

CASSETTE DECK DISPLAY

- **1. Tape Counter Display** The tape counter indicates the elapsed time of the running tape in minutes and seconds.

- The tape counter indicates the elapsed time of the running tape in minutes and seconds.

Minutes) (Seconds)

- The counter is reset to 0000, when the tape is ejected and loaded, and by the COUNTER RESET button.
- Making a memo of the contents of a recording and the range of the counter numbers while you are recording or playing back a tape will be convenient when you search for a portion of the tape you would like to listen to or when you search for the next portion you would like to record.

2. Tape Size Selector

- Match the tape size with the tape used.
- Press the TAPE SIZE button until the desired tape size is displayed.
 - To set it. With each press of the button, the display will change according to the following cycle.
- C46 → C50 → C54 → C60 → C74 → C90 → C100 → C120
- C54L → C50L → C46L
- ※ C46L, C50L, and C54L indicate large-hubbed cassettes.
- ※ Only values included in the display can be set.

3. END Display

Live display: This display indicates that the tape is reaching the end during recording or playback.

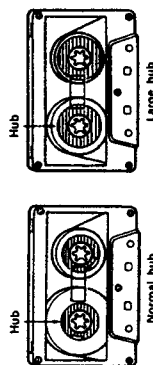
- Match the tape size with the tape you are going to use.
- The END indicator will start flashing when the remaining time to the end of the tape is about 5 minutes. (Note that this will be the case only when the TAPE SIZE setting and the length of the tape are in agreement. When the tape used and the TAPE SIZE setting differ, a large error may arise in the time at which the END indicator starts flashing.)
- When the tape has been recorded or played back to its end, the flashing of the END indicator will change to steady lighting. Note that this indicator is only a guide and its operation will vary according to the size of the hub diameter of the tape as well as with differences of tape thickness, so that the END indicator might not light in some cases.

NOTE: -

NOTE: This deck's linear tape counter has been set for the following cassette tape lengths: C46, C50, C54, C60, C74, C90, C100, C120, C48L, C50L, and C54L. (L indicates large-hubbed cassettes.)

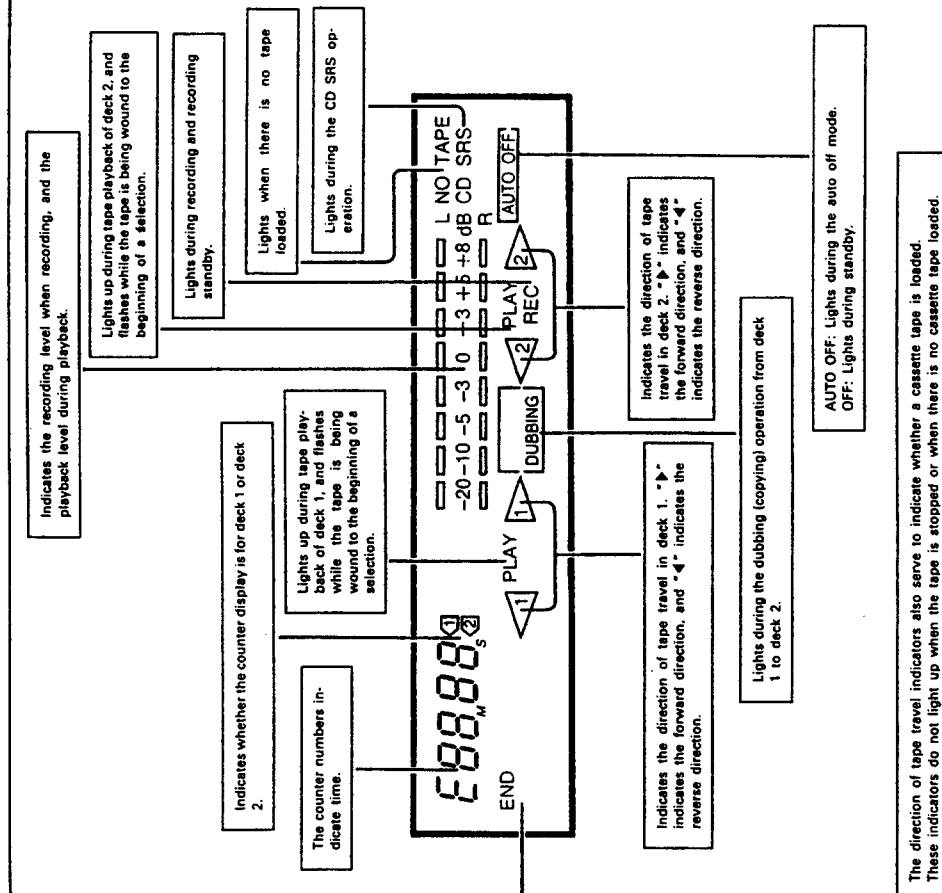
Using a tape that lies outside of this range, or a tape with a larger number of "cassette" layers, will result in a different length than the displayed lengths, will result in a different frequency when using a tape that is not included in the TAPE menu, and will result in a different length when using the TAPE SIZE selection, select the tape size closest to the length of the tape to be used. This will reduce the error.)

The linear tape counter is not accurate like a clock. The thickness of the tape will differ depending on the type of tape used (tape position and time), and so there will be some error introduced. Error also arises from the difference between tapes with smaller and larger hubs.



- Large hubs are ones with a diameter of about 27 mm. Note that if the hub is larger than this, there will be a large error in indicating the tape travel time.

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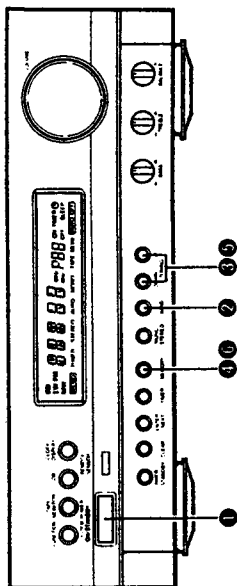
GENERAL SECTION

9

6 LISTENING TO RADIO BROADCASTS

(Check that connections are proper, referring to Page 5)

TUNING



Example: Tuning to 87.50 MHz, FM

1	Set the VOLUME control to the minimum position, then press the SYSTEM POWER button.		
2	Select the FM band with the BAND button.		
3	Use the UP and DOWN buttons to set the frequency to 87.50 MHz.		

Presetting MW, LW and FM Stations

Example: Presetting the (currently tuned) FM 87.50 MHz to preset number 3

4	Press the MEMORY button. [MEMORY] flashes for 10 seconds.		
5	Use the UP and DOWN buttons to call up the number to which you want to preset the station. Or, directly press the number buttons on the remote control unit. The preset number will flash.		
6	Press the MEMORY button while [MEMORY] is flashing.		

Up to 30 MW, LW and FM stations can be preset at random using this procedure.

Auto Tuning

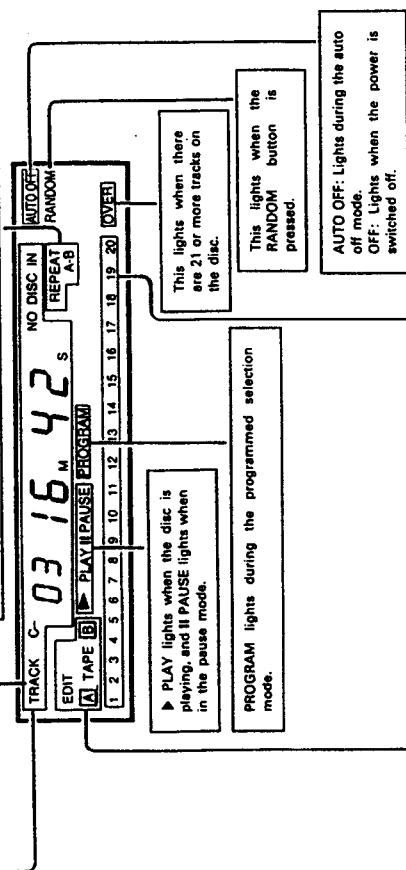
- When the TUNING buttons are pressed, the frequency changes in steps of 50 kHz for FM, 9 kHz for MW and 1 kHz for LW.
- If the TUNING UP or DOWN button is held in for more than 1 second, the frequency continues to change when the button is released.
- The next station is tuned in automatically and the tuning stops there. Note that tuning will not stop if the antenna input is weak and the TUNED indicator does not light. To stop the auto tuning, press the UP or DOWN button again.

CD PLAYER DISPLAY

Tape type and remaining time display
During the editing operation, C-00 lights and the tape time is displayed.

Track number display
00 is displayed when the disc data cannot be read properly.
When a disc is loaded:
• The total number of tracks is displayed in the stop mode.
• The track number is displayed in the play and program modes.
• [C] or [J] is displayed when the innermost or outermost section of the disc is reached in the manual search mode.

The indicators switch as follows when the REPEAT button is pressed in the play mode:
First press: REPEAT (single track repeat) The repeated track number lights on the music calendar.
Second press: REPEAT (all tracks repeat) The track numbers of the tracks on the disc light.
Third press: REPEAT A-
Fourth press: REPEAT A-B
Fifth press: No display
• When track 21 or higher is repeated in 1-track repeat, the TRACK number flashes.



During the editing operation, EDIT [A] TAPE lights up, the remaining time for side A of the tape is indicated on the time section of the display, the track numbers set for side A light on the calendar section of the display, while the track numbers set for side B flash. When the TAPE A/B button is pressed, [A] goes off, [B] lights, and the remaining time and track numbers set for side B are indicated in the same way.

Music calendar display

This indicates the track numbers on the disc to a maximum of 20.
The track numbers go off after the corresponding tracks are played.
In the program mode, the track numbers of the programmed tracks are indicated to a maximum of 20.
All track numbers from 1 to 20 light when the disc data cannot be read properly.

- NO DISC lights on the display if no disc is loaded, or if the disc is loaded upside-down or is heavily scratched or dirty.

GENERAL SECTION

7 USING THE TIMER

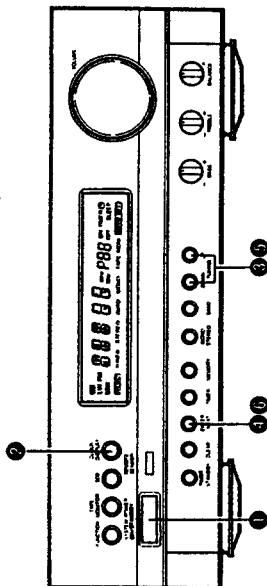
Setting the Timer

- Be sure to set the current time.
 - Regular timer: The power can be switched on and off once every day at the same time. (Wake-up music)
 - Sleep timer: The power can be set to turn off in up to 80 minutes in steps of 10 minutes using the remote control unit. (Bedtime music)
- Be sure to preset stations before setting the timer.
Refer to "Presetting MW, LW and FM Stations" on Page 9.
- Turn the standby switch off when not using the timer.

Power Failure

Should a power failure occur or if the power cord becomes unplugged from the power outlet, 00:00 or the time at which the power failed will flash on the time display. If this happens, reset the current time.
(Reset the current time and timer settings. If 00:00 was displayed, also reset the stations preset on the tuner.)
The standby mark starts flashing if there is a power failure or the power cord is unplugged while the standby mark is lit. If this happens, reset the time and the timer. (If the display reads 00:00, also reset the tuner's preset channels.)
To make the standby mark stop flashing, press the TIMER button, then press the TIMER or CLEAR button while "FUNC" is displayed.

Setting the Current Time (A 24-hour clock display is used.)



Example: Setting to 19:30 (7:30 p.m.)

1	Press the SYSTEM POWER button.		
2	Hold in the CLOCK/DISPLAY button for 3 seconds or longer.		The hour's place flashes. (All places flash if the time has already been set.)
3	Set the hours with the UP and DOWN buttons.		The set places flash.
4	Press the ENTER/NEXT button.		The minutes' places flash.
5	Set the minutes with the UP and DOWN buttons.		The set places flash.
6	Press the ENTER/NEXT button at the sound of a time signal. The time display lights steadily and the clock starts keeping the time.		The display lights steadily and the clock starts to count from 0 seconds.

Listening to Preset Stations

Example: Listening to the FM station preset at number 3

1 Press the TUNER button on the remote control unit.

2 Press button "3" on the remote control unit.

FM Stereo Reception


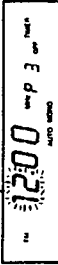





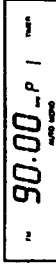

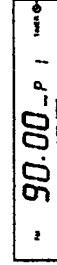

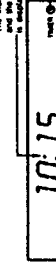
- When the MONO/STEREO button is pressed (which lights the AUTO and MONO indicators) and an FM stereo broadcast is received, the STEREO indicator lights and the station is received in stereo. If the MONO indicator is lit by pressing the MONO/STEREO button, the STEREO indicator goes off and the station is received in monaural.

Notes on Presetting

- When an FM station is preset, the auto or monaural mode is also set, so check the display before presetting the station.
- If a station is preset to a number at which another station has previously been preset, the previous station is cleared and the new station is preset.
- If the power cord is unplugged, the preset memory is not cleared immediately, but will be cleared if the cord is left unplugged over a long period. Should this happen, preset the stations again.

GENERAL SECTION

11

11	Use the UP and DOWN buttons to set the hour at which the timer is to switch off.		
12	Press the ENTER/NEXT button.		
13	Use the UP and DOWN buttons to set the minutes at which the timer is to switch off.		
14	Press the ENTER/NEXT button.		
15	Press the TIMER STANDBY button.		
16	Press the SYSTEM POWER button.		

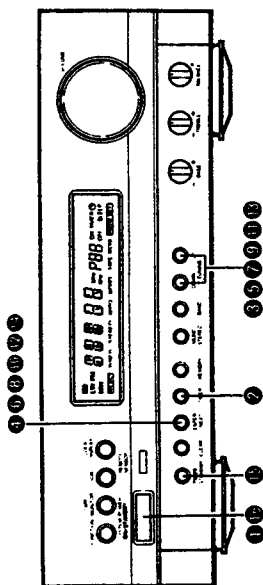
- When the TIMER STANDBY button is pressed and the "⊖" mark is lit, the timer will function at the same times each day.
- To switch off the timer, press the TIMER STANDBY button and turn off the "⊖" mark.

NOTE:




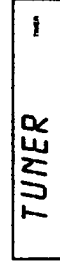
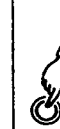

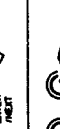
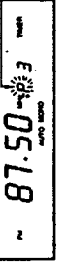
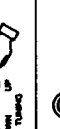
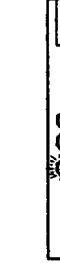

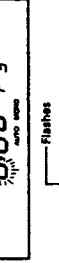

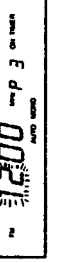






The timer standby mark "⊖" will not light unless the current timer has been set. Should this be the case, set the current time, then press the TIMER STANDBY button.

Setting the Timer

(Preset the MW, LW and FM stations in advance)



Example: Setting the timer to turn on at 12:35 and off at 12:56.
90.00 MHz FM is being received on preset number "1".
87.50 MHz FM is set to preset number "3".

1	Press the SYSTEM POWER button.		
2	Press the TIMER button.		
3	Press the UP and DOWN buttons to display "TUNER".		
4	Press the ENTER/NEXT button.		
5	Press the UP and DOWN buttons to set the preset number.		
6	Press the ENTER/NEXT button.		
7	Use the UP and DOWN buttons to set the hour at which the timer is to switch on.		
8	Press the ENTER/NEXT button.		
9	Use the UP and DOWN buttons to set the minutes at which the timer is to switch on.		
10	Press the ENTER/NEXT button.		

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GENERAL SECTION

Example 3: Unattended recording of radio broadcasts ("air checks")			
1	<p>Press the tuner-preamplifier's SYSTEM POWER button to switch on the power.</p> <p>Press the deck 2 OPEN/CLOSE button to open the tray.</p> <p>Load the cassette tape to which you will record. Press the OPEN/CLOSE button again to close the tray.</p>		
2	Press the tuner-preamplifier's TIMER button.		
3	Press the UP and DOWN buttons of the tuner-preamplifier to display "AIR.CH".		
4	Follow steps 4 to 16 under "Setting the Timer" on Page 11.		

- Timer recording starts in the direction indicated by the tape direction indicator of deck 2.
- Check that the tape direction and REV MODE switch settings are as desired.
- The section of leader tape at the beginning of the tape cannot be recorded. To avoid missing the beginning of the recording, set the starting time to about 1 minute before the program is scheduled to start.

Checking the Timer Settings

To check the timer settings, switch on the power of the tuner-preamplifier, press the TIMER button, then press the ENTER/NEXT button. The timer start mode, reception band, preset number, on time, and off time are displayed in order each time the ENTER/NEXT button is pressed. One more press returns the display to the reception frequency. When the on time and off time have not been set, DDDD flashes and there is no transition to the next display.

Changing the Timer Settings

When the timer setting operation is repeated, the previous settings are deleted and the new settings are set.

Deleting the Timer Settings

The timer settings can be cleared by pressing the TIMER button and then while FUNC is being displayed, pressing the TIMER button again or pressing the CLEAR button.

Note about the Set Timer

If the set time of the timer is reached while the power is on, the timer settings will take over and there will be a switch to the function that has been set on the timer.

Cancelling the Timer

Press the TIMER STANDBY button and the " " mark will go off.

Ways to Use the Timer

Example 1: Waking up to the music of a compact disc.			
1	<p>Press the tuner-preamplifier's SYSTEM POWER button to switch on the power.</p> <p>Set the compact disc in the tray. Press the OPEN/CLOSE button again to close the tray.</p>		
2	Press the tuner-preamplifier's TIMER button.		
3	Press the UP and DOWN buttons of the tuner-preamplifier to display "CD".		
4	Follow steps 6 to 16 under "Setting the Timer" on Page 11.		

Example 2: Waking up to the music of a cassette tape.			
1	<p>Press the tuner-preamplifier's SYSTEM POWER button to switch on the power.</p> <p>Press the cassette deck's OPEN/CLOSE button to open the tray.</p> <p>Load the cassette tape. Press the OPEN/CLOSE button again to close the tray.</p>		
2	Press the tuner-preamplifier's TIMER button.		
3	Press the UP and DOWN buttons of the tuner-preamplifier to display "TAPE".		
4	Follow steps 6 to 16 under "Setting the Timer" on Page 11.		

- The tape will be played back in the direction indicated by the tape direction indicator in the tape deck on the side of the tape counter display.

GENERAL SECTION

8 CASSETTE DECK

Before Recording and Playback




Auto Reverse


This deck is equipped with an auto reverse mechanism, so cassette tapes can be played and recorded on both sides or played continuously without having to turn them over.

- **Direction of tape travel**
This deck has two play buttons, one for the forward direction (front side) and another for the reverse direction (back side). The side being played can be changed during playback by pressing the opposite play button.

Reverse mode

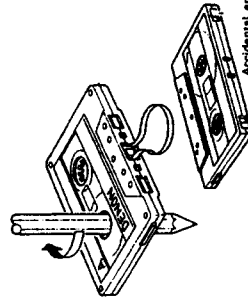
Set the reverse mode switch (REV MODE) as follows:

- **Single-side recording/playback mode ()**
In this position, only the front side or the back side of the cassette tape is played or recorded. (The tape stops automatically when the end of that side is reached.)
- **Two-side recording/playback mode ()**
In this position, when the end of the front side is reached, recording or playback automatically switches to the back side and continues from there. (The tape stops automatically when the end of the back side is reached.)
- **Continuous playback mode ()**
When tape is loaded in only one of the decks, playback continues until the STOP button is pressed.

- **Relay playback mode ()**
When tapes are loaded in both decks, playback continues from deck 1 onto deck 2, and then back again, as shown in the diagram at the right.

Cassette Tapes

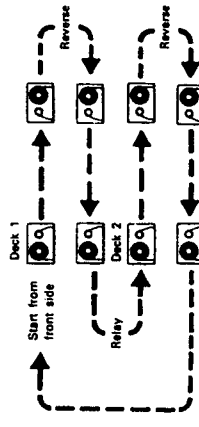
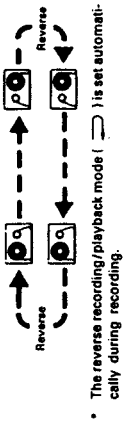
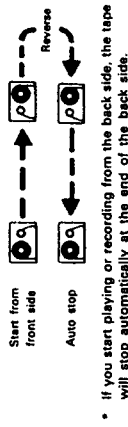
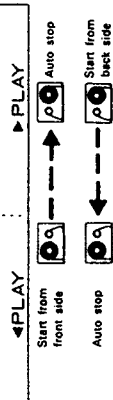
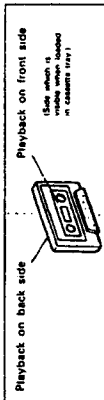
- **Handling Precautions**
 - C-120 cassette tapes
Avoid using 120-minute cassette tapes, since they have extremely thin tape which tends to become wound onto the capstans or pinch rollers.
 - Tape slack
If the tape is slack, it may become wound onto mechanism parts or otherwise damaged. Take up the slack with a pencil before loading the cassette.



Accidental erasure prevention tab for side A
Accidental erasure prevention tab for side B

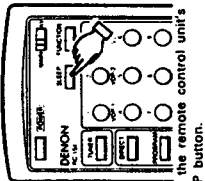
Storage Precautions

- Avoid storing in the following places:
 - Hot, humid places
 - Dusty places
 - Places exposed to direct sunlight
 - Near magnetic fields (TVs, speakers, etc.)
- Store the cassette tape in a case equipped with stoppers to keep the tape from coming slack.
- **Protecting Cassette Tapes From Being Erased Accidentally**
 - Cassette tapes are equipped with accidental erasure prevention tabs. To protect recorded tapes from being erased accidentally, use a screwdriver, etc., and break these tabs off.
 - To record on a cassette tape whose accidental erasure prevention tabs have been broken off, place a piece of cellophane tape over the hole.



Setting the Sleep Timer

(Use the remote control unit for these operations.)
Example: Setting the power to switch off in 50 minutes.

1	 <p>Press the remote control unit's SLEEP button.</p>	<p>Currently receiving 87.50 MHz, FM.</p> <p>"87.50" is displayed.</p> <p>"60" appears and flashes for 5 seconds.</p> <p>"SLEEP" appears and flashes for 5 seconds.</p>
2	<p>Press the SLEEP button again while "SLEEP" is flashing.</p>	<p>"50" is displayed, and the frequency display (87.50) reappears after 5 seconds.</p> <p>The power is switched off after 50 minutes.</p>

- If the sleep timer and regular timer settings overlap, the sleep timer is given priority.
- Do not press the TIMER STANDBY button after the power has been switched on with the timer. If this is done, the timer will not function properly.
- If the same time is set for the on time and off time, the power will not be switched on even when the "STANDBY" indicator is lit.
- If the timer is set for an AM or FM station and the on time of the timer is reached while listening to another station, the tuner switches to the station which was set with the timer.
- If the display is not normal, unplug the power cord, then holding in the MEMORY button and the BAND button, plug the power plug into the power outlet. This will reset the tuner to the initial settings and provide a proper display. If this is done, reset the preset stations, current time, and timer settings.

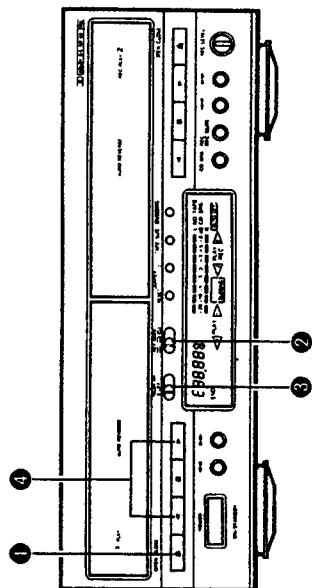
Cancelling the Sleep Timer

- To cancel the timer while it is operating in the sleep mode, press the SLEEP button, and while "SLEEP" is flashing, press the CLEAR button on the tuner-preamplifier.
- Press the SLEEP button and continue to press it until the power is switched off. When the power is switched off the sleep timer will be cancelled.

GENERAL SECTION

9 PLAYING CASSETTE TAPES

(Single Side Playback, Two-Side Playback, and Continuous Playback)



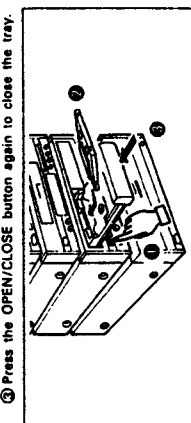
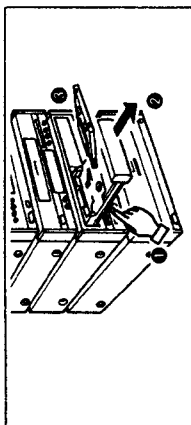
- Functions common for deck 1 and deck 2.
- When operating from the remote control unit, the operation switches between deck 1 and deck 2 each time the [DECK] 1/2 button is pressed. The counter indicator (1) or (2) lights for the selected deck.

1	Press the OPEN/CLOSE button, and load a recorded tape into the tray. Refer to Page 14.	<p>LOADING THE TAPE</p> <p>The tape can be loaded easily by inserting it at an angle.</p>
2	Set the REV MODE switch. Refer to Page 13.	<p>REV MODE</p> <p>Single side playback</p> <p>Two-side playback</p> <p>Continuous playback</p>
3	Set the DOLBY NR switch. Refer to Page 6 ⑥.	<p>DO NOT SET DOLBY NR SWITCH</p> <p>Set to B or C (as indicated on the tape) for tapes recorded with Dolby NR.</p>
4	Press the play button (▶ or 4).	<p>Press the stop button (■) to stop the playback.</p> <p>Playback starts in the direction of the button pressed.</p>

Before Operating

Loading and Unloading Cassette Tapes (Common for Deck 1 and Deck 2)

- Loading
 - ① Press the OPEN/CLOSE button (▲) to open the cassette tray.
 - ② Set the tape in the cassette tray with the open side (on which the tape is exposed) facing away from you.
 - ③ Press the OPEN/CLOSE button again to close the tray.



Check the following before recording or playing cassette tapes:

1. Is the head dirty?...
2. Are the accidental erasure prevention tabs broken off?...

Recording is not possible if these tabs are broken off. Refer to Page 13.

NOTE:

- Load the cassette tape on an angle with the open side facing away from you. Loading it in the opposite direction can cause damage.
- Do not press the OPEN/CLOSE button during playback or recording. Always press the STOP button before pressing the OPEN/CLOSE button.

Using the Tape Counter (Linear Tape Counter)

- This counter displays the elapsed running time of the tape in minutes and seconds.
- The counter can be reset to 00:00 by pressing the COUNTER RESET button. Or, the counter will also be reset when the tape is loaded or unloaded.
- Making a memo of the contents of a recording and the range of the counter numbers while you are recording or playing back a tape will be convenient when you search for a portion of the tape to which you would like to listen.

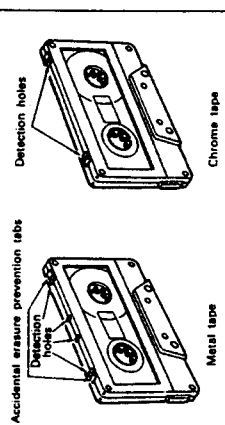
NOTE:

- This deck's linear tape counter has been set for the following cassette tape lengths: C46, C50, C54, C60, C74, C90, C100, C120, C48L, C50L, and C54L. (L indicates large-hubbed cassettes.) Using a tape that lies outside of this range, or a tape with a different length than the displayed lengths, will result in error. When using a tape that is not included in the TAPE SIZE selection, select the tape size closest to the length of the tape to be used. (This will reduce the error.)
- The linear tape counter is not accurate like a clock. The thickness of the tape will differ depending on the type of tape used (tape position and time), and so there will be some error introduced. Error also arises from the difference between tapes with smaller and larger hubs, and shows up in the remaining tape display (END mark).

Auto Tape Selector Mechanism

This deck is equipped with an auto tape selector mechanism which uses the detection holes in the cassette halves to automatically set the recording bias and equalization best suited for that type of tape.

- Do not use ferrichrome tapes.
- Use metal tapes equipped with detection holes. (Use of the old type of metal tape without detection holes will result in the sound having an emphasized treble region.)



PLAYING CASSETTE TAPES

Using the MS (Music Search) Function and the Music Search Display

Using the MS (Music Search) Function

- Use this function to move to the beginning of the following section or return to the beginning of the current selection.

① Press **▶** or **◀**.

② Press **▶▶** or **◀◀**.

- In the rewind direction, playback starts from the beginning of the selection which is currently playing, and in the fast-forward direction, playback starts from the beginning of the following selection.

The tape stops by a number of selections equal to the number of times the **▶▶** or **◀◀** button is pressed.

For example:



- For the normal fast-forward or rewind operations, press the stop button **■** before pressing the **▶▶** or **◀◀** button.

Display During the Music Search Operation

During the music search operation, the number of selections being skipped is indicated on the tape counter, and this number decreases each time a blank section is detected (for example, 3 → 2 → 1).

- When skipping back to a previous selection

P-03 —Number of tracks to be skipped

⬇ This lights when skipping backward

- When skipping ahead to a following selection

P-05 —Number of tracks to be skipped

Adjustment of the Recording Input Level Control

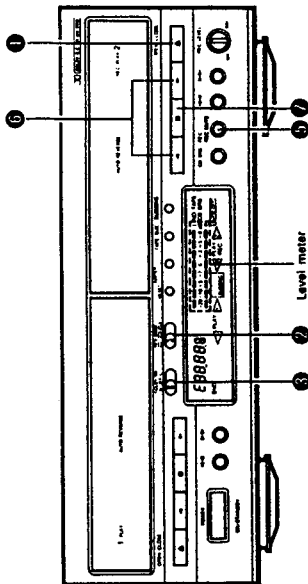
Too high a recording level will result in a recording which has a high degree of distortion, whereas too low a recording level will result in a high degree of noise. Adjustment of the recording input level is of the utmost importance in making a well-balanced recording.

Guide to Recording Input Levels

Type I (normal) tapes	0 dB
Type II (CrO ₂) tapes	+3 dB
Type IV (metal) tapes	+3 dB

NOTE:
The optimum recording level will actually differ depending on the source and the type of tape, and so a trial recording should be made.

10 RECORDING CASSETTE TAPES



- The positions of the VOLUME and tone controls do not affect the sound being recorded.

1	Press the OPEN/CLOSE button ▲ for deck 2 and load the tape to which you will record. Refer to Page 14.	OPEN/CLOSE ▲	Single-side recording Two-side (reverse) recording.
2	Set the REV MODE switch to ▶▶ or ◀◀ . Refer to Page 13.	REV MODE ▶▶ or ◀◀	
3	Set the DOLBY NR switch. Refer to Page 6.	DOLBY NR OFF or ON	Set to B or C to record with Dolby Noise Reduction.
4	Recording from the radio Press the BAND selector button. Select the station you wish to record. (Refer to Page 9.) Recording from a VDP or DAT Press the tuner-preamplifier's FUNCTION button and select PHONO or DAT. Start playback on the VDP or DAT.	BAND selector button FUNCTION button	Recording from a CD player Set the disc in the CD player. (Refer to Page 16.)
5	Press the REC/REC MUTE button.	REC/REC MUTE button	(5) Press the CD SRS button. The CD SRS indicator lights and recording starts.
6	Press the ▶ or ◀ button. (Recording starts)	▶ or ◀ button	
7	To stop recording, press the stop button.	Stop button ■	

Adjust the recording level.

REC LEVEL

Adjust the lighting condition of the level meter with the recording level control. Refer to the section on Page 15.

Recording level control

- When the CD SRS button is pressed, a 7-second blank portion is automatically created before recording starts.

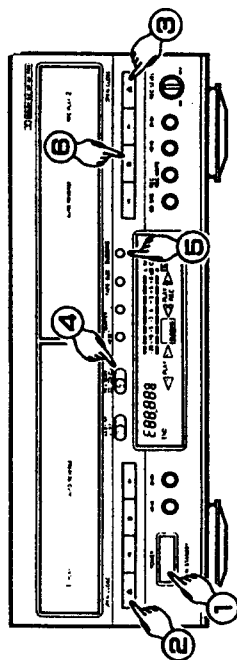
GENERAL SECTION

RECORDING CASSETTE TAPES

Making a Synchro Dubbing (Copy)

Synchro dubbing (tape copying) can be made at regular speed from deck 1 to deck 2.

Press the SYSTEM POWER button of the tuner-preamplifier.



- ① Press the SYSTEM POWER button of the tuner-preamplifier or press the POWER ON/STANDBY button of the deck.
 - ② Press the OPEN/CLOSE (▲) button and load the tape to be played back in deck 1.
 - ③ Press the OPEN/CLOSE (▲) button and load the tape to be recorded back in deck 2.
 - ④ Set the reverse mode with the REV MODE switch.
 - ⑤ Press the DUBBING (synchro dubbing) button. Note that if the POWER ON/STANDBY button of the deck is pressed to switch on the power, the power of the tuner-preamplifier will automatically be switched on when the DUBBING button is pressed. You will be able to hear the audio normally.
 - ⑥ To stop the dubbing, press the stop button (■) or press the DUBBING button. The tape will automatically stop when it reaches the end and the synchro dubbing mode will be cancelled.
- Recording level during synchro dubbing
During synchro dubbing, the recording is made at the same level as the playback tape of deck 1, regardless of the position of the recording level control. Note that when the recording tape and the playback tape are of different types, the recording level might be different and so synchro dubbing should be done with the same type of tape if possible.
 - Dolby NR mode during synchro dubbing
The Dolby NR system is automatically disengaged from the panel switch during synchro dubbing (even though the display does not change) and the tape is recorded with the Dolby NR mode of the playback tape.
 - You can listen to the sound of another source while synchro dubbing.
Changing the source with the FUNCTION button or the CD play button will not interrupt the synchro dubbing.
 - When synchro dubbing, both decks begin running in the forward direction (from the A side).
 - The synchro DUBBING button is effective in starting the operation only when both tapes are in the stopped condition.
 - The following buttons do not function during the synchro dubbing operation: forward play ►, reverse play ◀, fast forward ►►, rewind ◀◀, and REC/REC. MUTE.
 - To ensure complete reproduction, use the same length of recording tape as the playback tape, and rewind both tapes to the beginning of side A before starting the dubbing operation.
 - By setting the REV MODE switch to the ◀ or ◀◀ position, when the playback tape of deck 1 reverses at the end of the tape on side A, the deck 2 tape will reverse at the same time and dubbing can continue on side B.

11 PLAYING CDS

Compact Discs

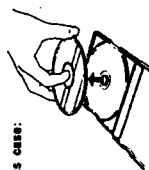
- Press the OPEN/CLOSE button (▲) once to open the disc tray, once again to close it.
- The disc tray can also be closed by pressing the play (▶) button.
- When this is done, playback automatically starts from the first track on the disc (if the tracks are programmed, the first programmed track).
- Load the disc with the label side facing up, being careful not to touch the disc surface.
- Load the disc with the disc tray open all the way.
- Set the disc securely in the tray guide at the center of the disc tray.
- To play an 8 cm disc, place the disc in the sunken part at the center of the disc tray.
- When the disc tray is closed, the disc turns automatically for several seconds, and the number of tracks and total playing time appear on the display.



Only discs with this mark can be played.

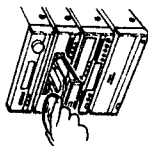
- For CDVs, only the audio part is played (the video part is not played).

Disc	Remarks
CD	
CDV	Only the audio part is played.
CD single (8 cm)	



- When removing the disc from its case:
As shown in the diagram, grasp the disc along the edges, gently press down on the hole in the middle with a finger, and lift the disc. It should come out easily.

- When setting the disc in the disc tray:
Always set the disc with the label side facing up. (Compact discs can only be played on one side). For 8 cm CDs, set the disc in the sunken part in the middle of the tray.

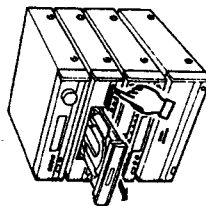


Handling the Disc Tray

Do not switch off the power or push or pull the disc tray when it is moving, since this may damage it.

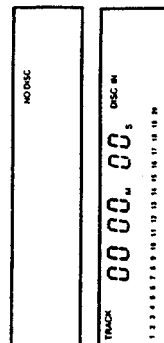
If the cord of a set of headphones, etc., gets caught in the disc tray when it is closed, press the OPEN/CLOSE button (▲) again.

- Never set objects other than CDs in the disc tray, as this can cause damage.



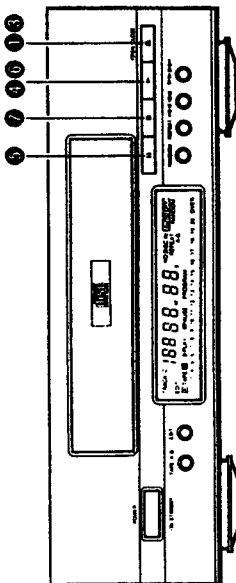
NOTE:

"NO DISC" is displayed on the display window when no disc is loaded, when the disc is loaded upside-down, or when the disc is not properly loaded. Also, "00.00" may appear during playback of a CD if the disc is scratched or dirty. If this happens, the set will not operate when a normal operating button (other than the OPEN/CLOSE button) is pressed, so press the OPEN/CLOSE (▲) button, remove the disc, clean it as necessary, then press the PLAY (▶) button again.



GENERAL SECTION

Regular Play



Example: Playing a CD with 15 tracks and a total playing time of 82 minutes 03 seconds, starting from track 1

1	Press the OPEN/CLOSE button.		NO DISC
2	Set the CD in the disc tray. Refer to Page 16.		
3	Press the OPEN/CLOSE button.		TRACK 15 52.03 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
4	Press the play button.		TRACK 01 16.01 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

To stop play temporarily:

5	Press the pause button.		"PAUSE" goes off and "IF PAUSE" appears. CD play is paused at the point the button is pressed.
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To resume CD play:

6	Press the play button.		"IF PAUSE" goes off and "PLAY" appears. CD play resumes from the point the pause button was pressed.
---	------------------------	--	---

To stop CD play:

7	Press the stop button.		TRACK 15 52.03 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
---	------------------------	--	---

NOTE:

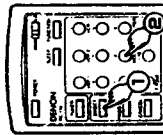
- 00 is displayed on the track number section of the display for several seconds after the disc is set, while the data on the number of tracks, playing time, etc., is being read from the disc. After this, the number of tracks and total playing time appear.

Various CD Play Functions

(Insert the disc before performing the following operations.)

Playing Certain Tracks

Example: Playing the 8th track
Perform this operation from the remote control unit.



- Press the DIRECT button.
- Press track button "8". "TRACK 8" appears on the display, and the 8th track begins playing.
- When the end of the track is reached, play continues on to the next track.

- For track numbers of 11 and higher, for example 15, press ± 10 and ± 5 .
- For track numbers of 20 and higher, for example 23, press ± 10 , ± 10 , and ± 3 .
- For track number 20, press ± 10 and ± 10 .

DIRECT SELECTION

Playing 1 Track Repeatedly

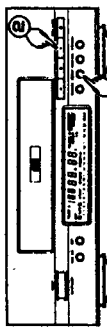


- Press the REPEAT button once.
- Press the ± 1 or ± 2 button, and select the desired track.
- Press the play button (\triangleright) to start play.

1 TRACK REPEAT

- When the specified track finishes playing, the pickup returns to the beginning of that track and play is repeated.
- If the REPEAT button is pressed once during play, the track will be played repeatedly.
- If the REPEAT button is pressed once during programmed play, the track will be played repeatedly.
- If the REPEAT button is pressed once while the disc is stopped, the TRACK numbers indicator flashes and the 1 track repeat play mode is set.

Playing All Tracks Repeatedly



- Press the REPEAT button twice.
- Press the play button (\triangleright) to start play.

ALL TRACKS REPEAT

- When the last track finishes playing, the pickup returns to the first track of the disc and play is repeated.
- If the REPEAT button is pressed twice during play, the disc will be played repeatedly.
- If the REPEAT button is pressed twice during programmed play, the program will be played repeatedly.
- If the REPEAT button is pressed twice while the disc is stopped, the TRACK numbers indicator lights and the all tracks repeat play mode is set.

Playing a Specific Section Repeatedly

Example: The CD has a total of 15 tracks

1st time	(1) Press the REPEAT button during CD play.		TRACK 03 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	Only that track is played repeatedly, and that track number lights on the music calendar. • With a 1-track repeat of track 21 or higher, "TRACK No." flashes.
2nd time	(2) Press the REPEAT button before CD play.		TRACK 03 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	The total number of tracks flashes, and then ① the first track is repeated by pressing the play button ② when play is started by direct selection from the remote control or with the ± 1 or ± 2 button, only those selected tracks are played repeatedly.
3rd time	Press the REPEAT button before CD play or during CD play.		TRACK 03 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	The track numbers contained on the disc light up on the music calendar, and all tracks are played repeatedly.
4th time	Press the REPEAT button during CD play.		TRACK 03 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	"REPEAT A." lights up. If nothing else is done, all tracks are played repeatedly.
	Press the REPEAT button during CD play.		TRACK 03 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	"REPEAT A-B" lights up. The A-B section is played repeatedly.
Pressing the REPEAT button once again returns the player to regular CD play.				

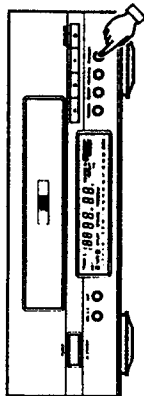
SECTION REPEAT

GENERAL SECTION

QUICK SEARCH

Moving to the Next Track During CD Play

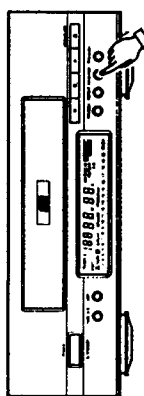
- Press the auto search forward button (▶▶▶▶).
- Each press of the auto search forward button (▶▶▶▶) moves the pickup to the beginning of following tracks.



QUICK SEARCH

Moving Back to the Beginning of the Current Track During CD Play

- Press the auto search backward button (◀◀◀◀).
- Each press of the auto search backward button (◀◀◀◀) during the search operation moves the pickup to the beginning of previous tracks.

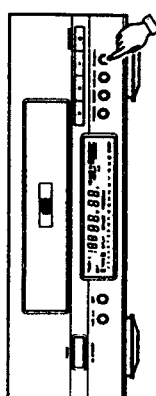


SKIP MONITOR

Searching for Tracks While Listening to the Sound

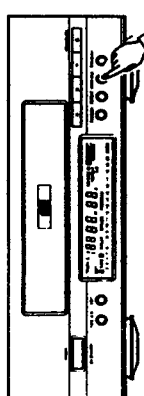
- Use this to skip through a disc listening to the sound at high speed.
- This function is convenient when searching for a certain section within a long track.
- Use the skip monitor function to find the desired position, then release the search button to start regular playback from there.

1 Forward skip monitor



During CD play, press and hold in the forward search button (▶▶▶▶) to skip forward while listening to the sound.

2 Backward skip monitor



During CD play, press and hold in the backward search button (◀◀◀◀) to skip backward while listening to the sound.

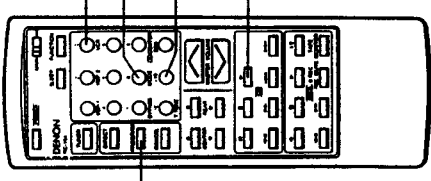
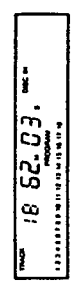
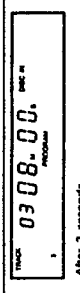
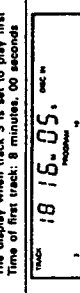
If the forward or backward skip button is pressed during programmed CD play and released at a track which has not been programmed, the next programmed track will be played once that track has been played to the end.

PROGRAMMED SELECTION

Playing Certain Tracks in any Desired Order
(Perform this operation from the remote control unit.)

Example: Programming track 3 to play first, track 18 to play second, on a CD with 18 tracks and a total playing time of 62 minutes, 3 seconds

Setting and Playing the Program (Set the Slide Switch to the "MAIN" Side.)

1	Press the PROGRAM button.		
2	Set track 3 to play first.		
3	Set track 18 to play second.		
4	Press the play button.		The tracks start playing in the programmed order.

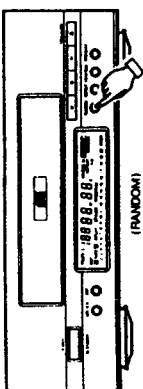
- The numbers of the programmed tracks go off once the tracks are played.
- The time display will read "— — — — — M — — — — S" if a track number of 31 or higher is set in the program.
- When a program is set during CD play after a direct selection, the track currently playing is set as the first track in the program.
- Up to 20 tracks of your choice from among track numbers 1 through 99 can be programmed with this CD player.
- If you attempt to set a track number that is greater than the number of tracks on the disc, that track number will not be displayed when the buttons are pressed.
- Programming is also possible when the disc tray is open. In this case, track numbers greater than the number of tracks on the disc can be programmed, but these are ignored when the disc is played.
- There is a silent interval of 4 seconds between tracks. This is has been designed to create a blank section of 4 seconds between selections when recording programmed tracks onto tape.
- The entire program is cleared when the disc tray is opened or closed (by pressing the ▲ button).
- If you make a mistake when programming tracks, press the CANCEL button and program again. (Each press of the CANCEL button cancels the last track.)
- An A-B section repeat is not possible during programmed play.
- Other operations possible during programmed play:
The quick search, pause, skip monitor, and other operations can be used during programmed play. To move to the beginning of the previous track with the quick search operation, press ◀◀◀◀ once, then once again while the time display reads 00.00. To move to the beginning of the following track, press ▶▶▶▶ once, regardless of the time display.
- Perform programming and canceling in the stop mode.

GENERAL SECTION

Playing Tracks in Random Order

- The function plays each track on the disc once in random order.
- Pressing the **RANDOM** button when a program has been set will play the programmed tracks in random order.
- Pressing the **RANDOM** button when repeat play has been set will play the tracks through randomly one time, and each time following this there will be a random search with a different pattern.
- An A-B section repeat is not possible during random play.
- During the search operation, the track numbers of the disc from track 1 to the last track will be repeatedly displayed at high speed in the TRACK NO. section, and the following tracks to be played will not be known from the end of the search to the time CD play begins.
- Pressing the **RANDOM** button when 1-track repeat has been set will automatically change the setting to all tracks repeat and these tracks will be played randomly.

NOTE:
Random play is not possible during the edit operation.

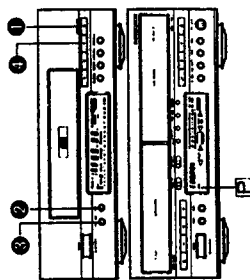


- A press of the **RANDOM** button lights the **[RANDOM]** indicator to show that the random mode has been set. Random search will begin when the play button is pressed and the disc will start playing automatically.
- Simply pressing the **RANDOM** button during CD play will start the random search and start random play.

Edited Recording onto Sides A and B of a Tape (EDIT)

Editing is possible with CDs containing up to 20 tracks.

Before starting the edited recording operation, load the cassette tape to which you will record into deck 2 with side A facing up. The leader tape is automatically taken up before recording starts. (Set the **REV MODE** switch to the **EDIT** position.)



Automatic Edited Recording

Example: Recording a disc with 18 tracks and a total playing time of 56 minutes onto a C-60 cassette tape.

1

Press the **OPEN/CLOSE** button. → Set the disc. → Press the **OPEN/CLOSE** button. → Press the play button and set the function to CD. → Press the stop button.

- With edited recording, side B of the tape will be recorded automatically even when the **REV MODE** switch of the deck is set to the **EDIT** position.
- During edited recording, only the following buttons will function: the stop button of the CD or the **OPEN/CLOSE** button, and the stop button of the deck.
- When using a recorded tape for edited recording, the tape should be erased before use, since when the tape is longer than the set time, an unrecorded section of side B will remain after the tape stops.
- When a tape which has been recorded with this system is played back, there will be 4-second blank portions between tracks (for making it easy to reach the beginning of a track). This will differ from the actual silent portions between the tracks on the disc, and so there will be some error in the actual remaining time of the tape and the displayed time.

2

Press the **EDIT** button to set the tape length.

Press the **EDIT** button four times when using a 60-minute (C-60) tape.

(The tape length is set to total time of sides A and B.)

The display changes as follows each time the **EDIT** button is pressed. (When the tape time has already been set, the display will change in order starting at that time each time the **EDIT** button is pressed.)

The desired recording time can be set when this is displayed. (Method 1)

Example: For a 36-minute tape, use the **EDIT** button to set 36.

To set the tape length using the remote control unit, use the number buttons. For example, in the case of a 30-minute tape, press **[30]** twice and press **[00]**.

If you make a mistake, press the **EDIT** button to display **C-00**, then start over again.

3

A/B button is pressed. (Use this to check the extra time on side B.)

The display changes between sides A and B each time the **TAPE** button is pressed.

4

Press the play button.

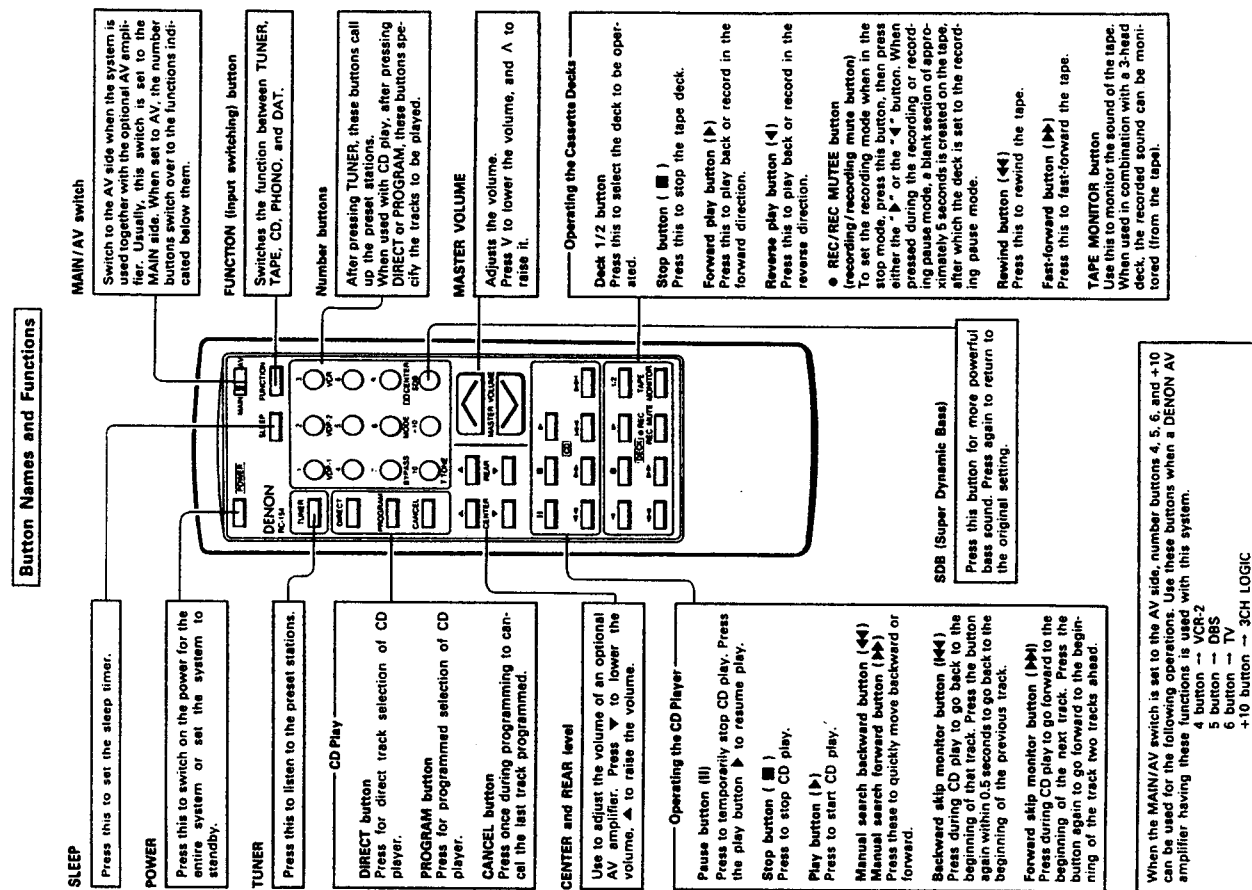
- Note that in some cases, even if the tape is longer than the total playing time on the disc, it may not be possible to record all the tracks onto the tape, since they are divided onto sides A and B. In such cases, the **OVER** indicator flashes.

- Programmed Edited Recording Follow the instructions under "PROGRAMMED SELECTION" on Page 18 to program the tracks.
- Perform steps 2 through 4 under the aforementioned "Automatic Edited Recording".

RECORDING CERTAIN TRACKS IN ANY DESIRED ORDER

- Pressing the **PROGRAM** button of the remote control unit will light up the "PROGRAM" indicator. When the disc is stopped, programming can be done with the search buttons **[44]** **[45]** **[46]** on the CD player or with the search buttons **[44]** **[45]** **[46]** on the remote control unit.
- Select the tracks with the search buttons, then press the **PROGRAM** button to program them.
- The search buttons **[44]** **[45]** **[46]** can be used to change the track numbers continuously.
- After the track numbers have been selected with the search buttons, if the play button is pressed to start CD play before the **PROGRAM** button is pressed, the last track of the program set up to this point will be played.
- In this case, the tracks selected with the search buttons will not be programmed.

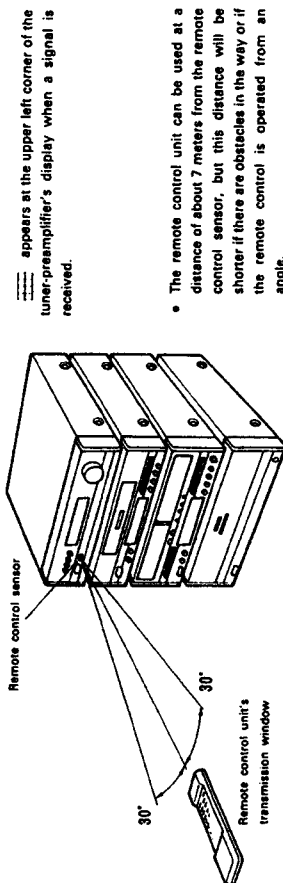
GENERAL SECTION



12 REMOTE CONTROL UNIT

Cautions on Use

- The D-250 is supplied with a remote control unit (RC-154) for system control.
- Replace the batteries with new ones when the transmission distance possible with the remote control unit shortens.
- For longer battery life, remove the batteries when not using the remote control unit for long periods.
- When replacing batteries, use two new batteries. Never use an old battery with a new one.
- Do not use two different types of batteries.
- Do not heat batteries or take them apart.
- Be careful that the remote control sensor is not exposed to direct sunlight or strong light from lighting fixtures.
- The remote control sensor is located on the tuner preamplifier. Point the remote control unit at the sensor, then press the buttons for the desired operation.
- Operate the remote control unit within the range illustrated in the diagram.



- Do not press buttons on the remote control unit and on the main unit at the same time. Doing so will lead to a malfunction.
- If the tuner-preamplifier's display due to incident light even though the remote control unit has not been operated, it is best to move the set or place it in a different direction. Even if this happens, it will not cause a malfunction with remote control unit.
- When adjusting the volume continuously with the remote control unit, the volume adjustment will stop if the remote control unit is moved away from the remote control sensor. Should this happen, press the button again to continue changing the volume.

15 SPECIFICATIONS

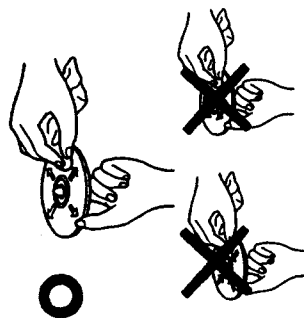
- **Tuner-preamplifier (UTP-250)**
Reception Frequency Range:
Receiving Sensitivity:
FM Stereo Separation:
Bass Adjustment:
Treble Adjustment:
Super Dynamic Bass:
Jacks:
FM: 87.50 MHz to 108.00 MHz
AM: 522 kHz to 1611 kHz (MW), 153 kHz to 279 kHz (LW)
FM: 15 µV, 75 ohms (SN ratio 30 dB)
AM: 20 µV (SN ratio 20 dB, MW), 35 µV (SN ratio 20 dB, LW)
40 dB (1 kHz)
100 Hz ± 8 dB
10 kHz ± 8 dB
80 Hz ± 8 dB
PHONO: Input jacks
DAT: Input jacks, recording output jacks
Processor: Processor input/output jacks
270 (W) × 86 (H) × 330 (D) mm (10.5/8" × 3.25/64" × 13")
3.2 kg (7 lbs 10 oz)
AC 230 V, 50Hz, AC 240 V, 50Hz (for U.K. model)
18 W
50 W ± 50 W (20 Hz to 20 kHz, 8 ohm)
6.3 mm headphone jack
270 (W) × 86 (H) × 330 (D) mm (10.5/8" × 3.25/32" × 13")
4.1 kg (9 lbs 1 oz)
AC 230 V, 50Hz, AC 240 V, 50Hz (for U.K. model)
140 W
- **Dimensions (max.):**
Weight:
Power Supply:
Power Consumption:
Rated Output Power:
Jacks:
Dimensions (max.):
Weight:
Power Supply:
Power Consumption:
CD Player (UCD-250)
Wow and Flutter:
Sampling Frequency:
Light Source:
Dimensions (max.):
Weight:
Power Supply:
Power Consumption:
Cassette Deck (UDRW-250)
Type:
Heads:
Tape Speed:
Noise Reduction Circuits:
Usable Tapes:
Dimensions (max.):
Weight:
Power Supply:
Power Consumption:
Remote Control Unit (RC-154)
Type:
Number of Buttons:
Dimensions (max.):
Weight:
FM: 87.50 MHz to 108.00 MHz
AM: 522 kHz to 1611 kHz (MW), 153 kHz to 279 kHz (LW)
FM: 15 µV, 75 ohms (SN ratio 30 dB)
AM: 20 µV (SN ratio 20 dB, MW), 35 µV (SN ratio 20 dB, LW)
40 dB (1 kHz)
100 Hz ± 8 dB
10 kHz ± 8 dB
80 Hz ± 8 dB
PHONO: Input jacks
DAT: Input jacks, recording output jacks
Processor: Processor input/output jacks
270 (W) × 86 (H) × 330 (D) mm (10.5/8" × 3.25/64" × 13")
3.2 kg (7 lbs 10 oz)
AC 230 V, 50Hz, AC 240 V, 50Hz (for U.K. model)
18 W
50 W ± 50 W (20 Hz to 20 kHz, 8 ohm)
6.3 mm headphone jack
270 (W) × 86 (H) × 330 (D) mm (10.5/8" × 3.25/32" × 13")
4.1 kg (9 lbs 1 oz)
AC 230 V, 50Hz, AC 240 V, 50Hz (for U.K. model)
140 W
Below measurable limits (±0.001% W. Peak)
44.1 kHz
Semiconductor
270 (W) × 86 (H) × 313 (D) mm (10.5/8" × 3.25/64" × 12.21/64")
3.1 kg (6 lbs 13 oz)
AC 230 V, 50Hz, AC 240 V, 50Hz (for U.K. model)
15 W
Horizontal 4-track, 2-channel auto reverse stereo cassette deck
1 hard permalloy recording/playback head, 1 hard permalloy playback head,
and 1 double-gap ferrite erase head
4.75 cm/s
Dolby B and C NR
Normal, chrome, and metal tapes
270 (W) × 86 (H) × 318 (D) mm (10.5/8" × 3.25/32" × 12.33/64")
4.4 kg (9 lbs 11 oz)
AC 230 V, 50Hz, AC 240 V, 50Hz (for U.K. model)
18 W
Infrared pulse
41 (including 1 slide switch)
60 (W) × 177 (H) × 18 (D) mm (20.23/64" × 6.31/32" × 45/64")
130 g (Approx. 6.4 oz) (including batteries)
• Maximum dimensions include controls, jacks, and covers. (W) = width, (H) = height, (D) = depth
• For improvement purposes, specifications and functions are subject to change without advanced notice.

13 AUTO ON/OFF FUNCTION

- When the CD or deck play button, or the OPEN/CLOSE button is pressed from the standby mode, the power is switched on automatically, and the play or open/close operation is performed. The "AUTO OFF" indicator lights at this time.
- When play ends in this mode and there are no operations for 10 minutes, the power is automatically switched off and the system enters the standby mode. If there is no disc or cassette in the system, the power will be switched off in about 1 minute.
- When the disc tray or the cassette tray is open, the tray will close in about 1 minute.
- When the tuner number buttons (preset numbers) are pressed, the power will be switched on in the same way and the system will enter the auto off mode. In this case, the "TUNED" indicator will go off and 10 minutes later the power will be switched off.

14 IMPORTANT INFORMATION

- **Head Demagnetizing**
The heads become magnetized after the deck has been used over a long period of time or if the heads are exposed to a magnetic field. This results in noise and reduced treble. In addition, there may be a reduction of the treble range of recorded tapes as well as noise produced on these tapes.
When the heads become magnetized, use one of the cassette tape head demagnetizers (erasers) available on the market to demagnetize the heads.
• For details, read the operating instructions of the demagnetizer.
- **Head Cleaning**
After the cassette deck has been used for a while, powder from the tapes and dirt adhere to the head and lower the sound quality. Use a head cleaning cassette tape to clean.
NOTE:
Some of the cleaning sets on the market have a strong polishing effect which can damage the head.
- **Disc Cleaning**



- Never use the following to clean discs:
- Solvents such as benzene or alcohol
 - Cleaners containing abrasives
 - Record sprays or cleaners
 - Anti-static products

GENERAL SECTION

Normal operation may not be possible if there is dirt or other substances on the surface of the internal objective lens or sensor.
These parts must be cleaned periodically depending on the place of installation.
For details, contact your store of purchase.

Avoid using ultrasonic humidifiers nearby.
If ultrasonic humidifiers are used nearby, the calcium, etc., included in the water may be scattered into the air, causing white dust to accumulate on the surface of the objective lens or sensor, resulting in improper operation.

When Condensation Forms

The signals of the disc may not be read and this product will not operate properly. To remove the condensation, take out the disc and switch on the power. The condensation will evaporate within 1 hour and the set will operate normally.

Dew (Condensation) Phenomenon

Dew (water droplets) may form on the lens of the internal optical system or on the disc, or on the rotating parts of the tape deck in situations such as the following:
• Soon after a heater is put on.
• When the set is placed in a steamy or damp room.
• When the set is moved from a cold place to a warm room.

This system consists of precision components using microprocessors. Avoid using it in places where there is much external noise. If used in such places, the system may not operate properly, but this is not a problem with the system. If the system does not operate properly, try performing the desired operation again.

16 TROUBLESHOOTING

1. Check that the connections are proper.
2. Check that you are operating the system according to the instructions in the manual.
Check the following table if the system does not seem to be working properly.
If the problem is not solved after checking these points carefully, the system may be malfunctioning. Switch off the power and contact your store of purchase.

Symptom	Cause	Measures	See Page
Common	Power does not come on when POWER button pressed.	• Power cord not plugged into outlet.	5
	No sound produced from speakers.	• VOLUME control set to minimum. • Headphones are plugged in. • Speaker cables not connected to speaker terminals.	6 6 5
	Tape not produced. Orientation of sound field not clear.	• Speaker polarities (\pm and \ominus) not matched.	5
	Source other than the desired one is heard.	• Function selector button not set properly.	6
Deck	Cannot record when REC/REC MUTE button pressed.	• No cassette tape loaded. • Accidental erase prevention tabs of cassette broken off.	14 13
	Sound is interrupted during playback and recording, or treble sound is low.	• Head dirty. • Tape stretched.	21 -
	Wow (fluctuation) is heavy during playback and recording.	• Capstans and pinch rollers dirty.	21
	Buzzing noise heard during playback.	• Clean.	-
Tuner	Hissing noise heard during FM reception.	• Noise from TV. • (Some TVs produce noise.)	- -
	Hissing or scratchy noise heard during AM reception.	• Antenna not pointed in proper direction. • Signals weak.	4 4
	Hum noise heard during AM reception.	• Noise from TV, etc., or interference from other stations.	- 4
	Hum noise heard during AM reception.	• Signals coming over power cord are modulated by power source frequency.	5 4
CD Player	Disc loaded but total number of tracks not displayed.	• Disc loaded upside-down. • Disc dirty. • Non-standard disc loaded.	16 21 16
	Operation not performed when buttons pressed, or playback stops in middle of track.	• Disc loaded upside-down. • Foreign object in disc holder. • Disc dirty. • Disc scratched.	16 16 21 -
	Sound skips.	• Dust, fingerprints, or spittle on disc. • Disc scratched. • Player set in shaky, unstable place.	21 - -
	Buzzing noise mixed in with CD sound.	• Signals coming over power cord are modulated by power source frequency.	5

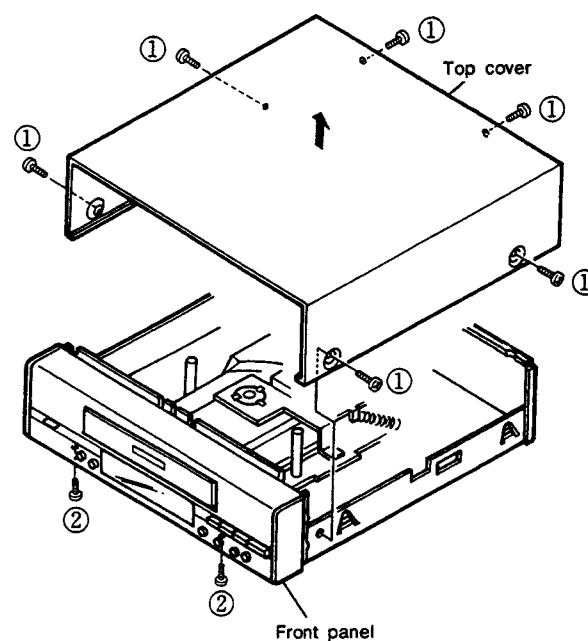
CD PLAYER SECTION

DISASSEMBLY PROCEDURES

(Follow these procedures in reverse order to reassemble.)

1. Removing the top cover and front panel

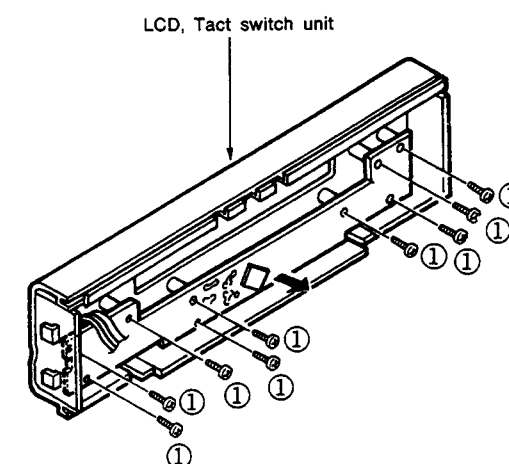
- ① Remove the 6 screws which fasten the top cover.
- ② Remove the 2 screws of the bottom side which fasten the front panel.



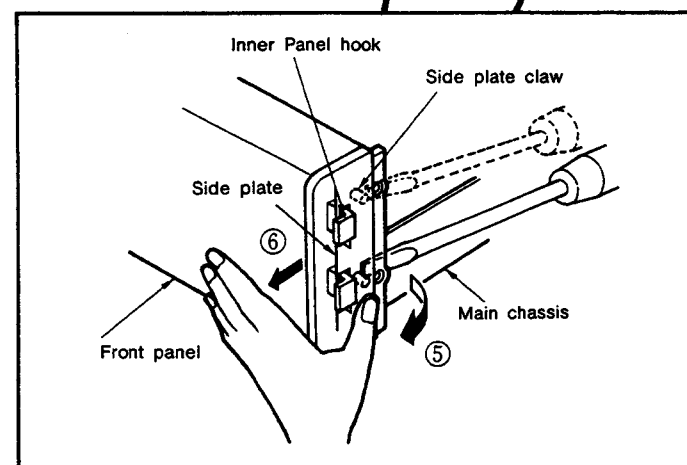
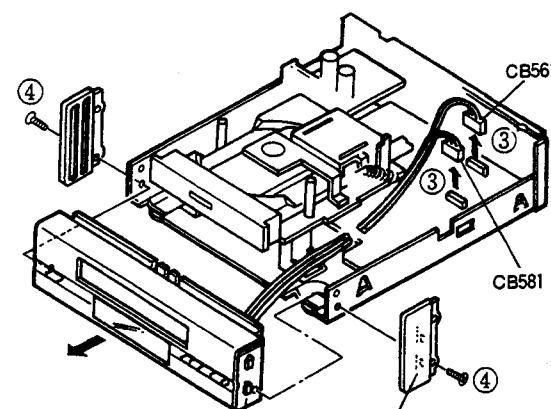
2. Removal of the Various Boards

LCD TACT SWITCH UNIT 1U-2478-2

- ① Remove the 9 screws which fasten the LCD Tact switch unit and remove the board in the direction of the arrow.

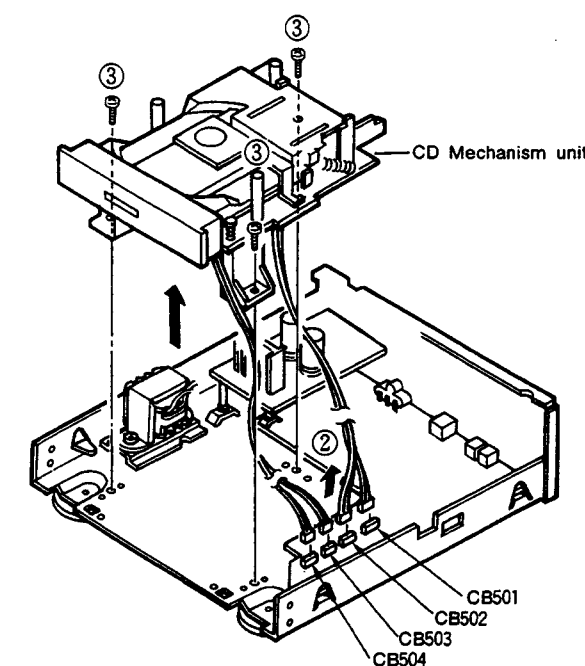


- ③ Disconnect connectors CB561 and CB581 which are attached to the main unit.
- ④ Remove the 2 screws which fasten the side plate.
- ⑤ While disengaging in the direction of the arrow the tabs of the side plate and the holes of the main chassis (with a flat-bladed screwdriver),
- ⑥ Use your fingers to push out the hook of the inner panel from the side plate in the direction of the arrow. Using the same method for the left side, remove the side plate. Remove the front panel in the direction of the arrow.



3. Removal of the CD Mechanism Unit

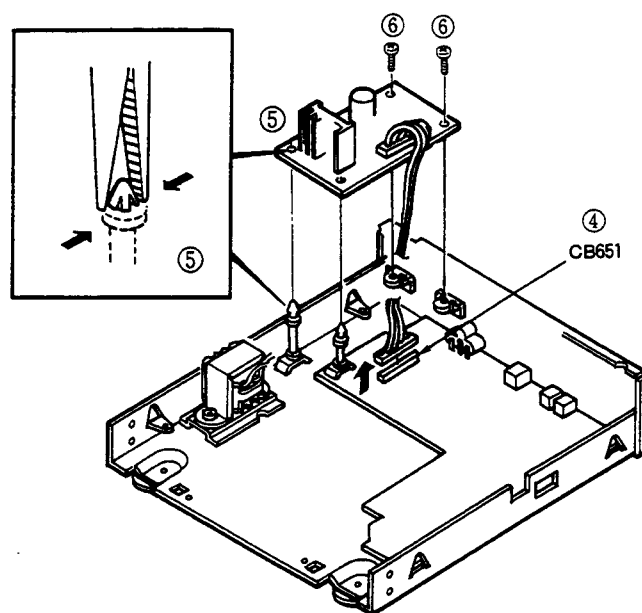
- ② Disconnect connectors CB501, CB502, CB503, and CB504 which are attached to the main unit.
- ③ Remove the 3 screws which fasten the CD mechanism unit and remove the mechanism unit in the direction of the arrow.



CD PLAYER SECTION

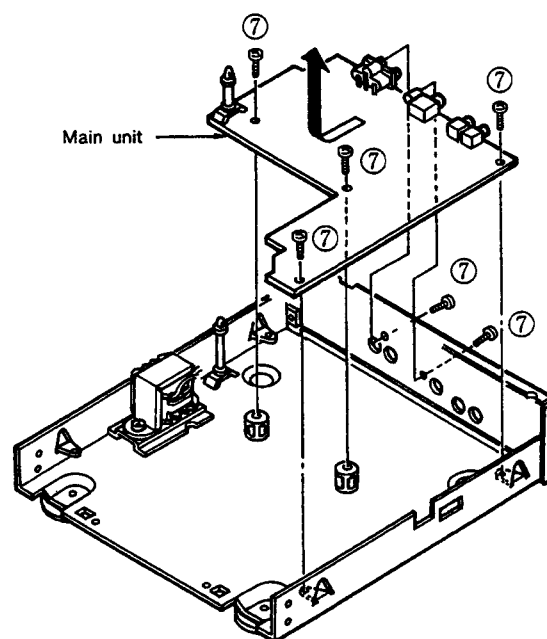
POWER UNIT 1U-2478-3

- ④ Disconnect connector CB651 which is attached to the main unit.
- ⑤ Use a pair of long-nosed pliers to disengage the board catch, which fastens the power unit, in the direction of the arrow.
- ⑥ Remove the 2 screws which fasten the power unit and remove the board in the direction of the arrow.



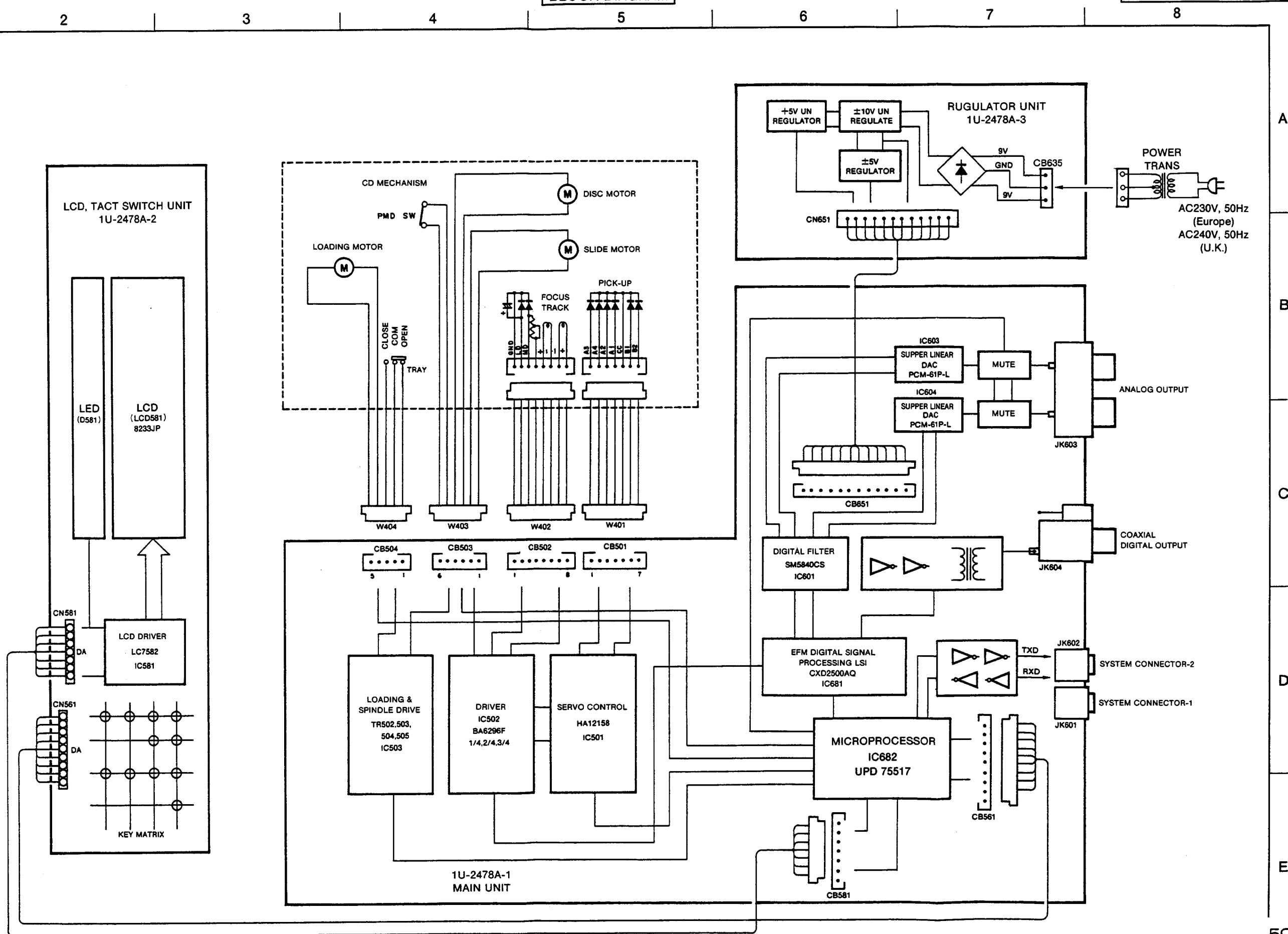
MAIN UNIT 1U-2478-1

- ⑦ Remove the 6 screws which fasten the main unit and remove the board in the direction of the arrow.



BLOCK DIAGRAM

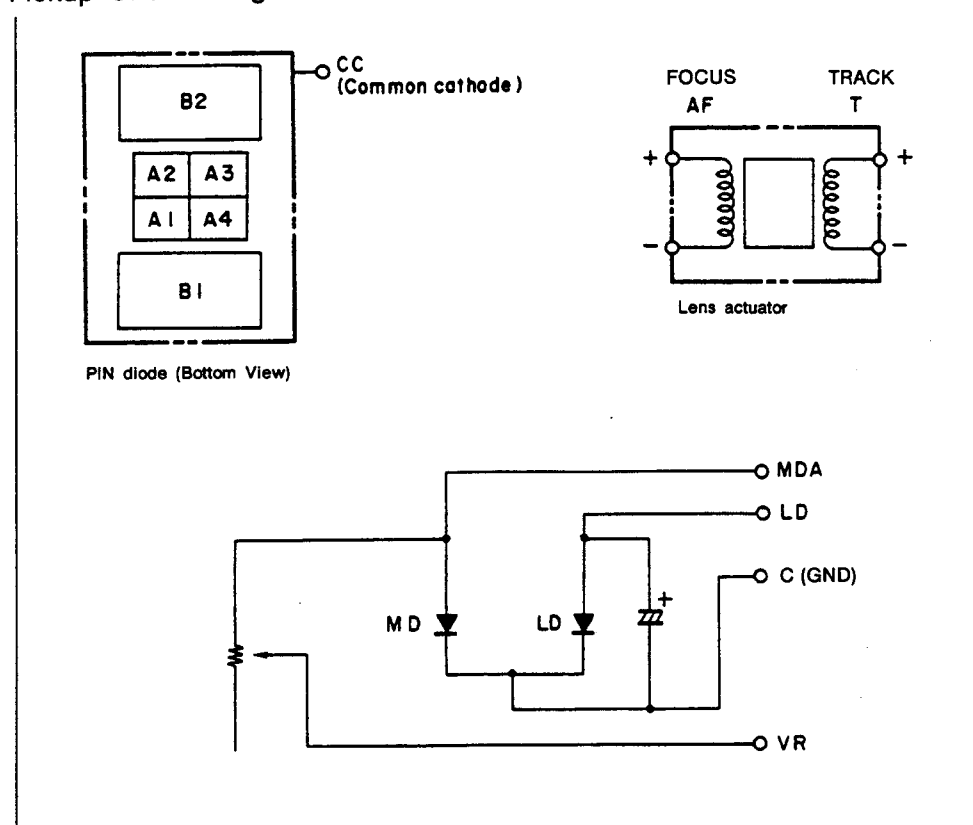
CD PLAYER SECTION



CD PLAYER SECTION

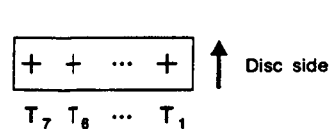
Connections Diagram

Pickup Circuit Diagram



1. PD connector

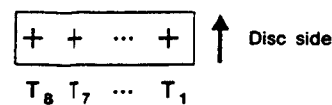
PH pin post 7 pins (Type number B7B-PH-K-S manufactured by Nippon Atchaku Tanshi Hanbai K.K.)



Tn	1	2	3	4	5	6	7
Item	A ₄	A ₃	A ₂	A ₁	CC	B ₁	B ₂

2. LD actuator connector

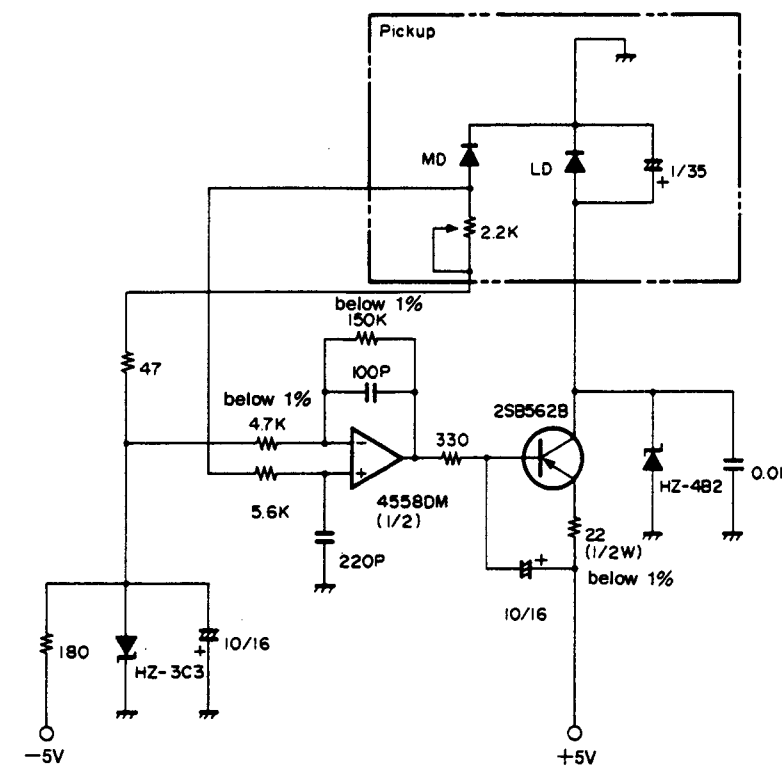
PH pin post 8 pins (Type number B8B-PH-K-S manufactured by Nippon Atchaku Tanshi Hanbai K.K.)



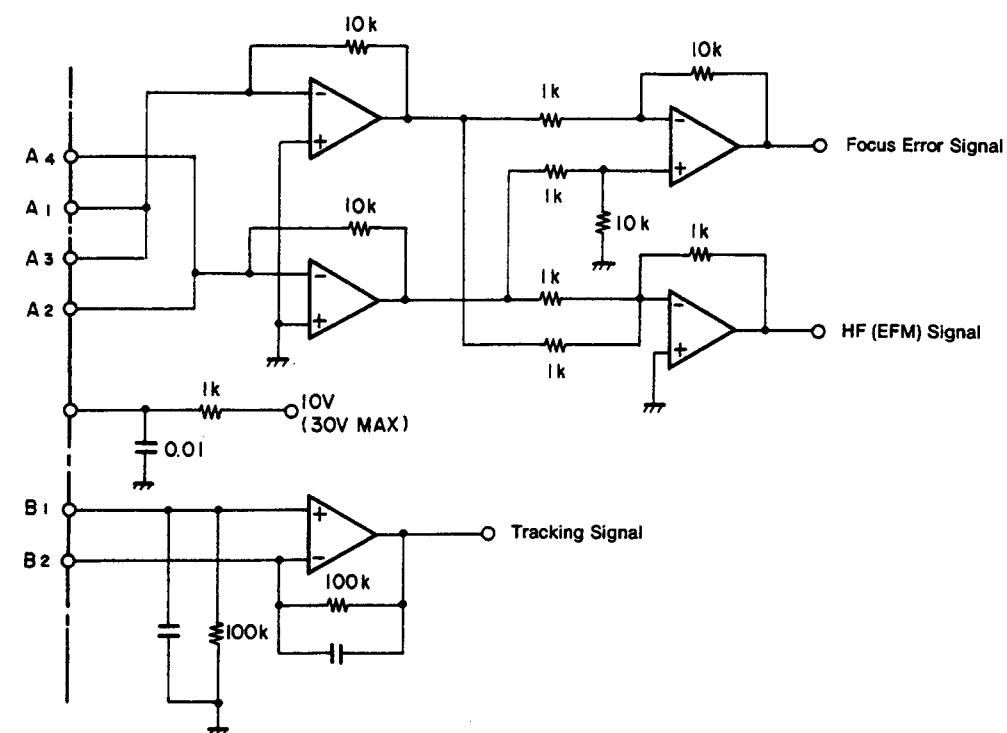
Tn	1	2	3	4	5	6	7	8
Item	C (GND)	LD	MD	VR	TR+	TR-	AF-	AF+

LASER PICKUP

Laser Drive Basic Circuit Diagram



Measurement Circuit Diagram



● Precautions in Use

Read the following carefully before handling.

1. Laser control circuit

The light output of the laser diode (LD) is greatly affected by temperature, so a built-in monitor photodiode should be used in the LD to supplement the light output.

In order to get rid of the dispersion of the monitor photodiode, the semiconductor resistor accompanying the pickup has been adjusted so that the mirror surface level of the HF signal becomes 250 mV when the measurement circuit of this manual and the basic laser drive circuit are used.

When designing a new laser drive circuit, note that the life of the laser will be shortened when the mirror level of the HF signal becomes 275 mV with this measuring circuit.

2. Wiring

Be sure to use the specified connectors for the wiring.

Note that the eye pattern may deteriorate when there is a microprocessor or other digital noise source in the vicinity from the photodiode to the harness.

Note that a poor connection related to the LD and actuator connector will cause deterioration of the laser, and so there should not be any looseness of connectors.

● Precautions in Handling

This mechanism has been precisely assembled and adjusted at a special factory. It should not be disassembled or adjusted without good reason. Pay attention to the following points related to handling.

1. General items

(1) Storage

Avoid storage in places with high temperatures and high humidity, and in places exposed to a lot of dust.

(2) Handling

The unit has been precisely adjusted and care should be taken so as not to expose the unit to shocks through dropping or careless handling.

2. Semiconductor laser (LD)

(1) Protection of the eyes from the laser

The output of the LD is via an objective lens and is a maximum of 400 μ W, but reaches approximately 1.3×10^4 W/cm² in places where there is condensed light. After being condensed by the objective lens, the beam widens and so is all right at a distance of 30 cm or further, but during operation the LD should never be allowed to be viewed directly or through another lens or mirror since this is dangerous.

(2) Destruction by surge currents or static electricity

When a large current flows through the LD, even for a very short period, the strong light which the LD generates itself will advance the deterioration of the LD or destroy it.

Wire a switch into the LD drive circuit or provide another method of preventing the flow of surge currents. Also, when handled without care, the LD can be destroyed instantly by the application of static electricity from the body. Therefore, when handling the LD, be sure to ground your body and ground the measuring instruments, jigs, and tools. It is also desirable to use a grounding mat on the work bench and floor.

3. Lens actuator

(1) The actuator section uses a strong magnetic circuit, so that when magnetic bodies come too close, their characteristics are altered.

Also be careful not to allow foreign matter to enter from the cover gap.

(2) Lens cleaning

Dust or dirt adhering to the objective lens will change the performance.

To clean, blow the dirt away with clean air from an air blower.

4. Handling

Be sure not to contact the lens when handling the LD.

Note that direct contact of the body or other objects with the circuit of the LD board will cause deterioration to occur, so sufficient care should be taken.

CD PLAYER SECTION

SERVICE POINTS

1. Parts replacement of the tray mechanism (Figs. 1 and 2)

(1) Removal of the tray

Open the tray and use a flat-bladed screwdriver to press the stopper portions of Fig. 1 (one each in the left and right locations) in the direction of the black arrow, then remove in the direction of the white arrow.

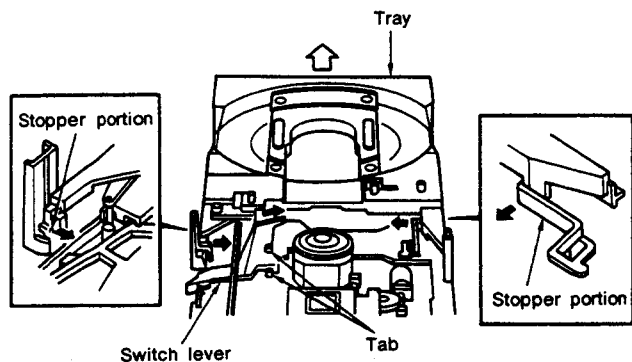


Fig. 1

(2) Mounting of the tray (Figs. 1, 2, and 3)

Rotate the switch lever in the direction of the arrow, set the latches of the tray as illustrated in Fig. 2, then align the rails of the tray in the grooves of the loading plate, and insert so that the pinch lever pins of the switch lever enter into the rack grooves. Push in the tray while pressing the stopper portion inside a little.

(Check that the latches are in the positions illustrated in Fig. 2.)

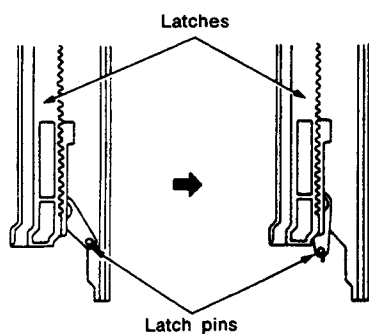


Fig. 2

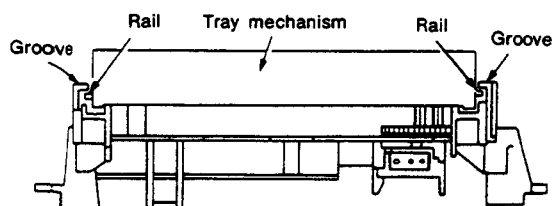


Fig. 3

(3) Replacement of the disc holder (Fig. 4)

With the tray removed, remove tabs (D) and (E) of the disc receptacle of Fig. 4, then lift up and off.

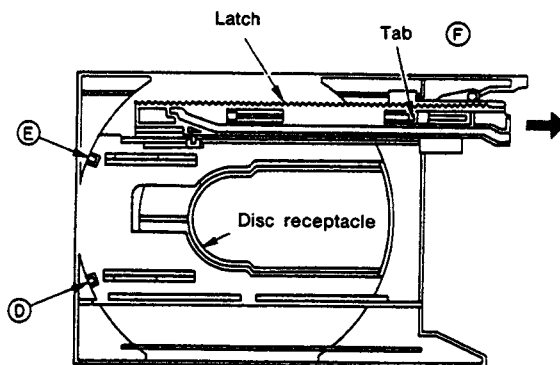


Fig. 4

(4) Replacement of the latches (Fig. 4)

Set the latches into the condition of Fig. 4, lift the latch tab (F) up about 1 mm with a flat-bladed screwdriver and remove the rack in the direction of the arrow.

(5) Removal of the loading motor and switches (Fig. 5)

Remove the belt from the loading motor, then remove the 3 tabs. Remove the fixed tabs from the various switches.

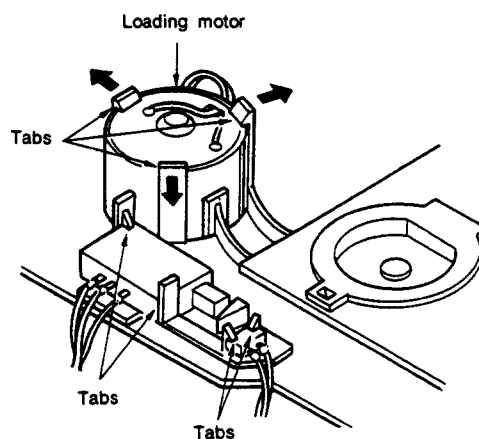


Fig. 5

(6) Replacement of the belt

Replace the belt with the tray removed.

(7) Replacement of the clammer (Fig. 6)

Hook the elongated holes of the clammer onto the C arm, bend the elongated hole sections and attach.

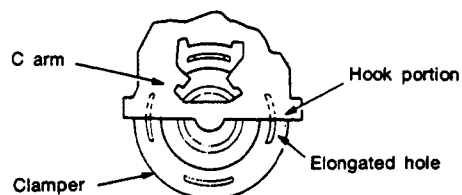


Fig. 6

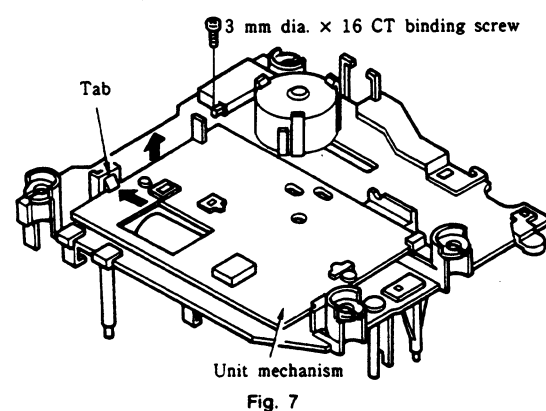
(8) Replacement of the switch lever (Fig. 1)

Remove the tabs of the bottom side (in 2 locations).

CD PLAYER SECTION

2. Removal of the unit mechanism (Fig. 7)

After removing the loading mechanism, remove the tab of the bottom surface (in one location) as illustrated in Fig. 7.



(1) To replace the DC motor (D2) and the turntable, follow the procedure below

- 1) Pull the turntable (plastic) off vertically from the unit plate.
- 2) When fitting on the servicing turntable (metal), make a height adjustment. (Fig. 8)

Do not exert excessive force to the shaft of the DC motor (D2) at this time.

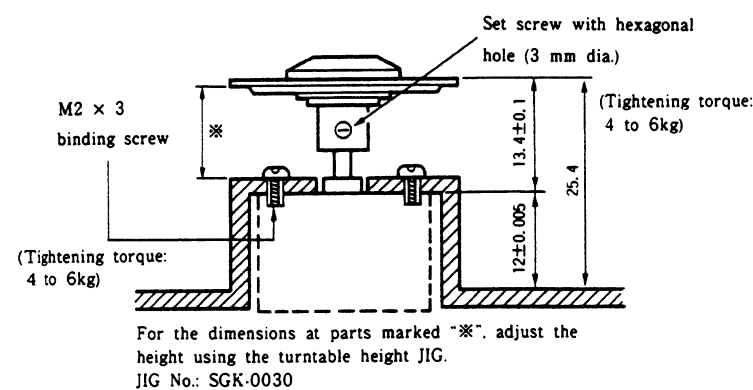


Fig. 8

- 3) At the time of service replacement of the DC motor (D2), do not apply excessive force in direction B. When part C of the unit plate is misshapen, it will cause eye pattern deterioration. (Fig. 9)

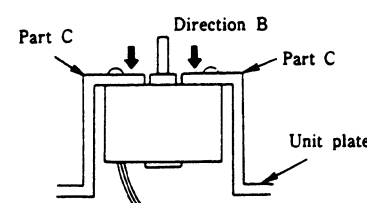


Fig. 9

NOTE:

- Motor replacement or turntable replacement method
Remove the pressure-fitted turntable, and remove the motor screws.
- Do not reuse a turntable (plastic) that has been removed once.

- (2) When disassembling and assembling the unit mechanism, assemble with wiring resembling that of Fig. 10

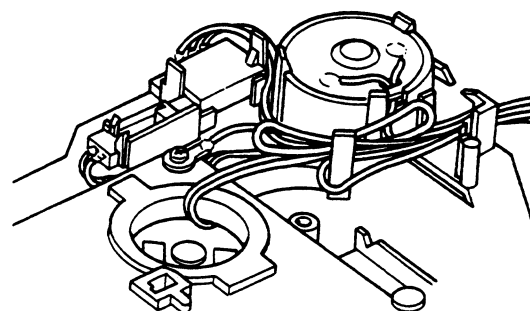


Fig. 10

3. Inspection of the objective lens (Fig. 11)

Handle so as not to get dirt or dust on the objective lens of the lens actuator section. Note that when used for a long period, dirt or dust may have adhered to the objective lens. Try cleaning the surface of the objective lens with a dry, clean cotton swab.

If the dirt still does not come off, moisten the cotton swab with a small amount of water and wipe. When doing this, be careful not to get water on any parts other than the lens.

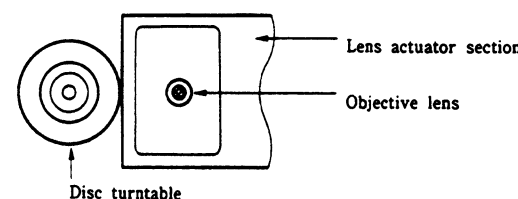


Fig. 11

4. Inspection for laser breakdown

The laser is normally driven with a current of 30 to 80 mA. If this laser drive current value is measured at 120 mA or higher in the circuit, the laser may be thought to be faulty. (The current value is measured by taking the voltage (0.99 to 3.3 V) across both ends of R401, which is 33 ohms).

5. Precautions at time of servicing (Fig. 12)

(1) Semiconductor laser

The semiconductor laser is very susceptible to static electricity destruction and surge currents. Be careful never to touch the terminals of the semiconductor laser and the terminals of the flexible board with your hands or a tool.

As illustrated in Fig. 12, the current and light intensity characteristics increase abruptly once the threshold current value is exceeded.

Also note that this threshold current differs a little from laser to laser. In view of this, when replacing the unit mechanism or any work that involves setting the amount of light of the laser, be sure to turn the adjustment control VR401 fully in the counterclockwise direction, and then raise it to the specified value.

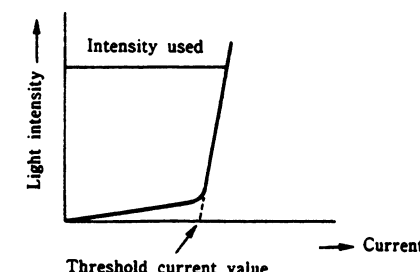


Fig. 12

(2) Handling the unit mechanism (Fig. 13)

When handling the pickup mechanism and the unit mechanism, use a ground ring such as the one illustrated in Fig. 13. (A ground ring can be constructed using ordinary lead wire.)

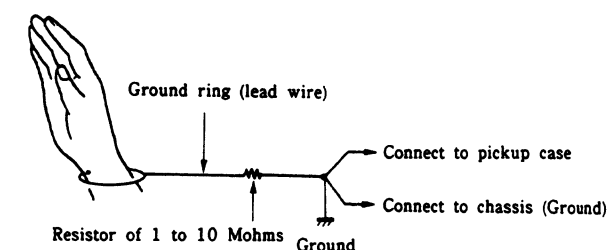


Fig. 13

6. Inspection of the actuator (Fig. 14)

Check the resistance value of the actuator coil. It is normal if the values are as follows:

Focusing coil	30 ohms
Tracking coil	10 ohms

If the coils are open or shorted, the actuator may be thought to be broken. Also, a 1.5 V battery can be used to observe if the lens moves.

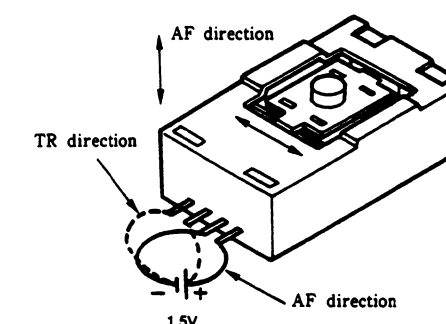


Fig. 14

CD PLAYER SECTION

ADJUSTMENT METHOD

The microprocessor contained in this unit incorporates a service program which allows a wide variety of service adjustments to be conducted easily by using the operation buttons.

1. Method of starting the service program

Switch on the AC power while simultaneously pressing the ► PLAY button and the ▲ OPEN/CLOSE button of the CD unit (UCD-250). When all power has been switched on there will be a transition to the service program. At this time the display section of the CD unit (UCD-250) display tube will indicate "01".

NOTE: Once the service program starts the operation buttons cannot be used for normal operation.

2. Operation functions when the service program is operating

Operation button	Operation function	Description
▲ OPEN/CLOSE	Opens and closes the disc holder.	● Opening and closing takes place when the rotation of the disc has stopped. ● Other operation buttons are performed when the opening and closing operation is completed.
■ STOP	Stops system operation.	● Track number display becomes 01 . ● Press when an adjustment has been completed or is redone.
► PLAY	Operates the focus servo and rotates the disc.	● Press at the time of the tracking offset adjustment. ● After the operation is completed, the track number display becomes 02 .
⏸ PAUSE	Operates the focus servo, tracking servo, slide servo, and the spindle servo.	● When the play button has been pressed, the tracking servo and slide servo are operated. ● After the operation is completed the track number display becomes 03 .
Other buttons	Operation is not normal.	● Do not operate buttons other than the above. ● When a button is operated by mistake, immediately turn the power switch off.

NOTE: Do not use the remote control while the service program is operating.

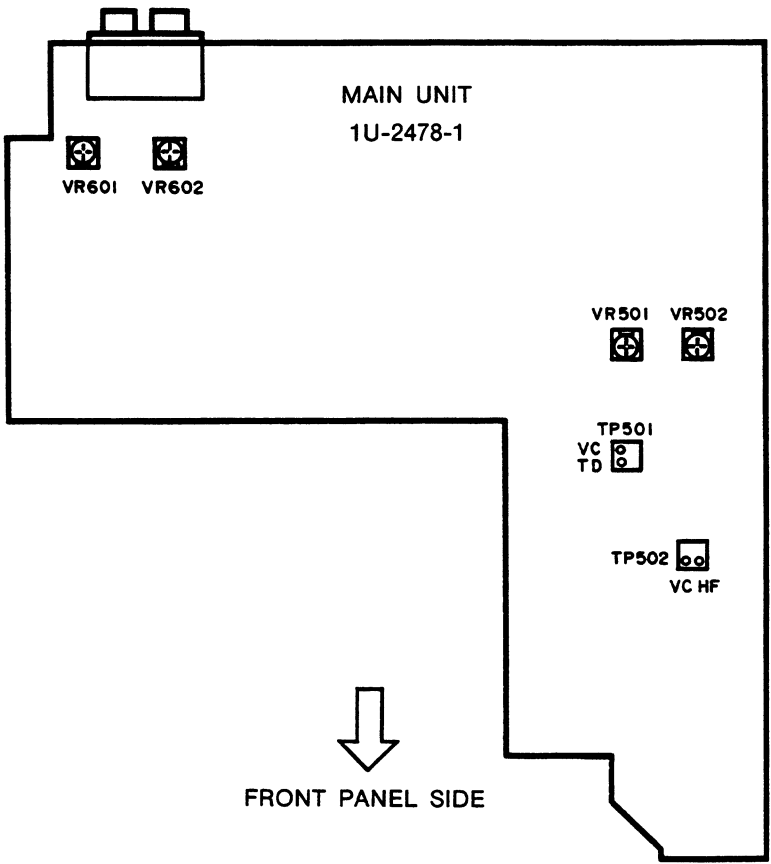
3. Adjustment method

(1) Measuring instruments required in the adjustment

- ① Dual-trace oscilloscope
- ② Oscilloscope

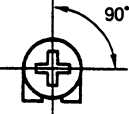
OUTLINE DIAGRAM OF ADJUSTMENT LOCATION

1U-2478-1 MAIN UNIT ASS'Y (Component Side)



NOTE: VR601 and VR602 have been adjusted before shipping and do not require adjustment.

(2) Adjustment preparation

1.	Set the adjustment control (VR501, 502) to the position illustrated.	VR501 (T-OFFSET) VR502 (F-OFFSET) 
2.	Adjustment step	1. Tracking offset 2. Focus offset

CD PLAYER SECTION

(3) Tracking offset adjustment

Wiring Diagram

Oscilloscope (DC range)		Adjustment location	Check items	Adjustment procedure
V	H	(Control)	DC Voltmeter	
0.2V/div	1~2ms/div	VR501	<p>A = B</p>	<ol style="list-style-type: none"> 1. OPEN/CLOSE Press the OPEN/CLOSE button and place an adjustment disc in the disc holder. 2. OPEN/CLOSE Press the OPEN/CLOSE button again and close the disc holder. 3. PLAY Press the PLAY button and check that the display indicates "02". 4. Short circuit the (+) and (-) terminals of the oscilloscope and check the board wiring. 5. Adjust the VR501 "T-OFFSET" control and set the upper and lower amplitude of the waveform to be equal.

(4) Focus offset Adjustment

Wiring diagram

Oscilloscope		Adjustment location	Check items
V	H	Control	Oscilloscope
50mV/div or 20mV/div	0.2 μ /div or 0.5 μ /div	VR502	<p>70mV 0V</p>

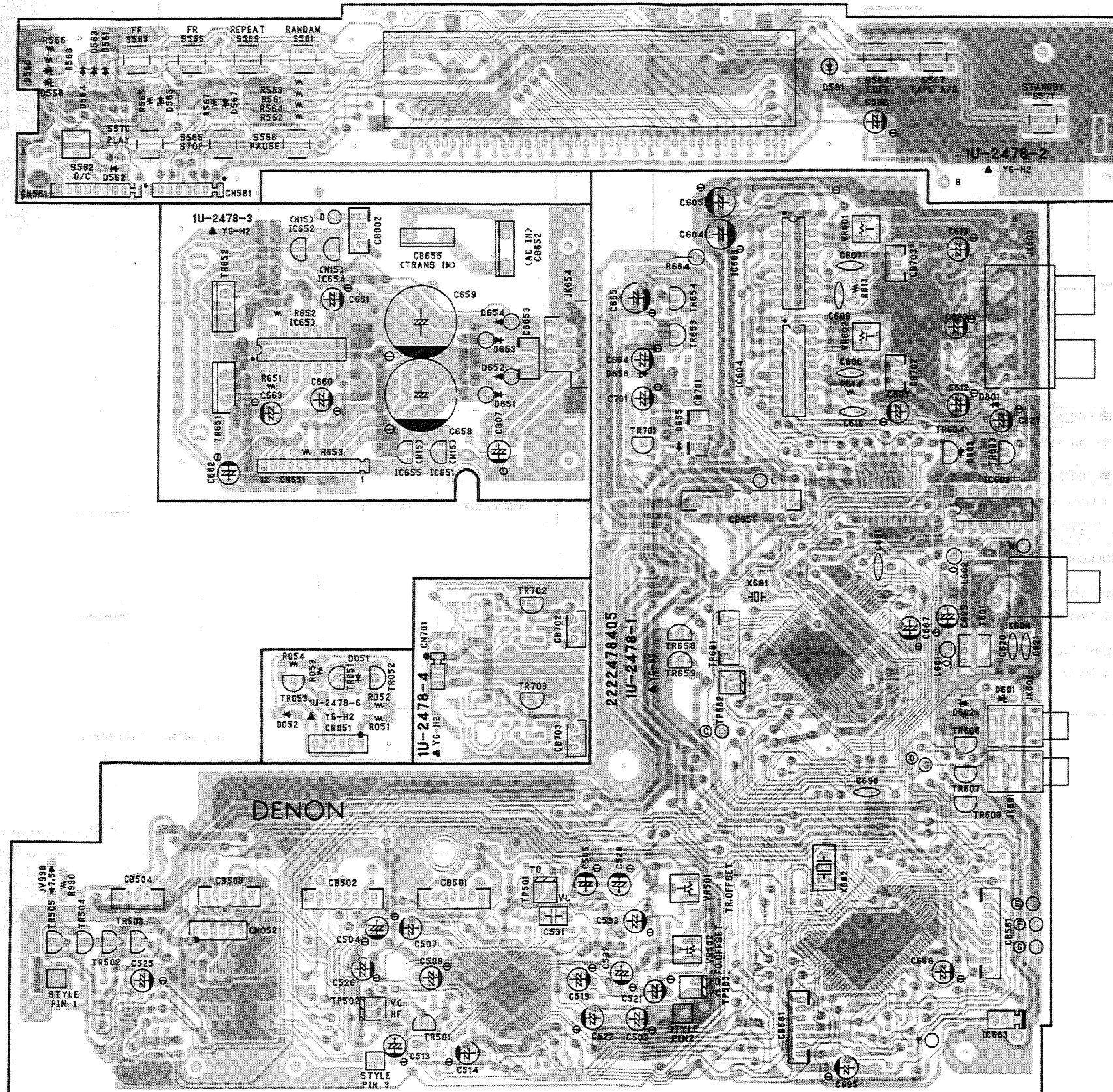
Adjustment Procedure

1. Press the **STOP** button.
2. Adjust VR502 "F. OFFSET" and set the FEO voltage to +70 mV (± 10 mV).

CD PLAYER SECTION

PRINTED WIRING BOARD

1U-2478 UCD-250 UNIT ASS'Y Component Side



CD PLAYER SECTION

1

2

3

4

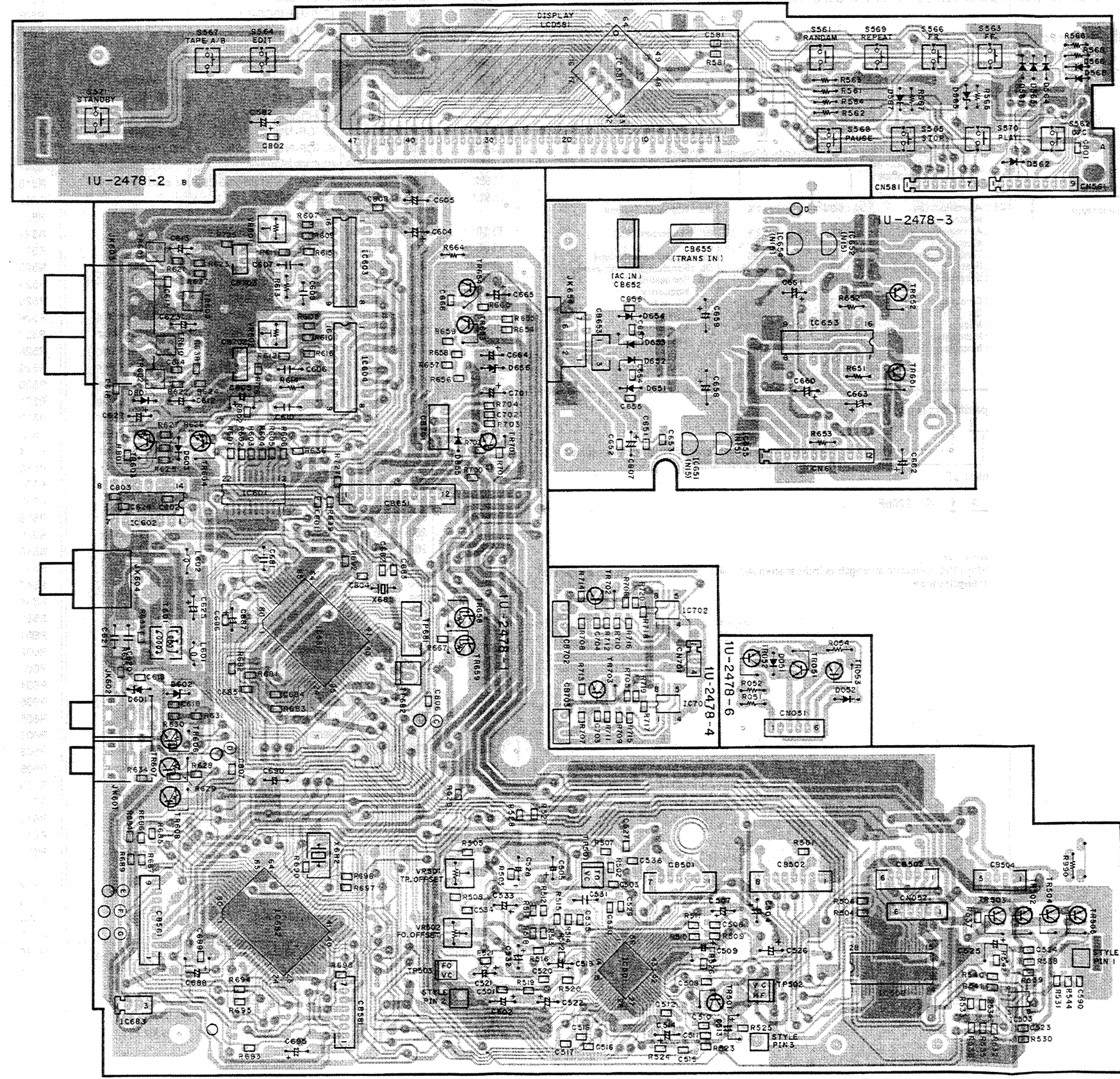
5

6

7

8

Pattern Side



A

B

C

D

E

CD PLAYER SECTION

NOTE ON PARTS LIST

- Part indicated with the mark "●" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "1" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film $\pm 5\%$, 1/4W Type in the P.W. Board parts list. (Refer to the Schematic Diagram for those parts.)

WARNING:

Parts marked with this symbol Δ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

Resistors

Ex.:	<u>RN</u>	<u>14K</u>	<u>2E</u>	<u>182</u>	<u>G</u>	<u>FR</u>
	Type	Shape and performance	Power	Resistance	Allowable error	Others
	↓	↓	↓			↓
RD : Carbon Film			2B : 1/8W	F : ±1%		P : Pulse-resistant type
RC : Composition			2E : 1/4W	G : ±2%		NL : Low noise type
RS : Metallic oxide Film			2H : 1/2W	J : ±5%		NB : Non-burning type
RW : Winding			3A : 1W	K : ±10%		FR : Fuse-resistor
RN : Metal film			3D : 2W	M : ±20%		F : Lead wire forming
RK : Metal mixture			3F : 3W			
			3H : 5W			

* Resistance

1 8 2 \Rightarrow 1800 ohm = 1.8 kohm

Indicates number of zeros after effective number
2-digit effective number

• Units: ohm

1 R 2 \Rightarrow 1.2 ohm

1-digit effective number.
2-digit effective number, decimal point indicated by R.

• Units: ohm

* Capacity (electrolyte only)

2 2 R \Rightarrow 2200 μ F

Indicates number of zeros after effective number.
2-digit effective number.

• Units: μ F

2 R 2 \Rightarrow 2.2 μ F

1-digit effective number.
2-digit effective number, decimal point indicated by R.

• Units: μ F

Capacitors

Ex.:	<u>CE</u>	<u>04W</u>	<u>1H</u>	<u>2R2</u>	<u>M</u>	<u>BP</u>
	Type	Shape and performance	Dielectric strength	Capacity	Allowable error	Others
	↓		↓		↓	↓
CE :	Aluminum foil electrolyte		0J : 6.3V	F : ±1%		HS : High stability type
CA :	Aluminum solid electrolyte		1A : 10V	G : ±2%		BP : Non-polar type
CS :	Tantalum electrolyte		1C : 16V	J : ±5%		HR : Ripple-resistant type
CQ :	Film		1E : 25V	K : ±10%		DL : For charge and discharge
CK :	Ceramic		1V : 35V	M : ±20%		HF : For assuring high frequency
CC :	Ceramic		1H : 50V	Z : +80%		U : UL part
CP :	Oil		2A : 100V	-20%		C : CSA part
CM :	Mica		2B : 125V	P : +100%		W : UL-CSA type
CF :	Metallized		2C : 160V	-0%		F : Lead wire forming
CH :	Metallized		2D : 200V	C : ±0.25pF		
			2E : 250V	D : ±0.5pF		
			2H : 500V	= : Others		
			2J : 630V			

* Capacity (except electrolyte)

2 R 2 \Rightarrow 2200pF = 2200 μ F = 0.002 μ F

(More than 2) — Indicates number of zeros after effective number.
2-digit effective number.

• Units: μ F

2 2 1 \Rightarrow 220pF

(0 or 1) — Indicates number of zeros after effective number.
2-digit effective number.

• Units: pF

• When the dielectric strength is indicated in AC, "AC" is included after the dielectric strength value.

1U-2478A P.W.B UNIT ASSY PARTS LIST

Ref. No.	Part No.	Part Name	Remarks	Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS GROUP				R503	247 0007 945	Chip Carbon 1 k ohm 1/10W	RM73B--102J
IC501	263 0821 000	IC HA12158		R504	247 0010 961	Chip Carbon 22k ohm 1/10W	RM73B--223J
IC502	263 0805 903	IC BA6296FP		R505	247 0008 931	Chip Carbon 2.4kohm 1/10W	RM73B--242J
IC503	263 0615 902	IC BA15218F		R506	247 0011 902	Chip Carbon 33k ohm 1/10W	RM73B--333J
IC581	263 0533 000	IC LC7582		R507	247 0010 987	Chip Carbon 27k ohm 1/10W	RM73B--273J
IC601	262 1397 909	IC SM5840CS-L1		R508	247 0008 931	Chip Carbon 2.4kohm 1/10W	RM73B--242J
IC602	262 1126 002	IC PC74HC00P		R509	247 0005 976	Chip Carbon 200 ohm 1/10W	RM73B--201J
IC603	262 1409 004	IC PCM61P-L		R510	247 0008 902	Chip Carbon 1.8kohm 1/10W	RM73B--182J
IC604	262 1409 004	IC PCM61P-L		R511	247 0009 969	Chip Carbon 8.2kohm 1/10W	RM73B--822J
IC651	268 0073 905	IC ICP-N15	IC Protector 15 V	R512	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J
IC652	268 0073 905	IC ICP-N15	IC Protector 15 V	R513	247 0010 929	Chip Carbon 15k ohm 1/10W	RM73B--153J
IC653	263 0693 005	IC M5290P		R514	247 0009 972	Chip Carbon 9.1kohm 1/10W	RM73B--912J
IC654	268 0073 905	IC ICP-N15	IC Protector 15 V	R515	247 0012 901	Chip Carbon 82k ohm 1/10W	RM73B--823J
IC655	268 0073 905	IC ICP-N15	IC Protector 15 V	R516	247 0010 903	Chip Carbon 12k ohm 1/10W	RM73B--123J
IC681	262 1514 009	IC CXD2500AQ		R517	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J
IC682	262 1625 406	IC μ PD75517GF-150-3B9	μ com	R518	247 0010 929	Chip Carbon 15k ohm 1/10W	RM73B--153J
IC683	262 0678 001	IC MN1280-S		R519	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J
TR501	271 0102 937	Transister 2SA1015(GR/Y)		R520	247 0010 929	Chip Carbon 15k ohm 1/10W	RM73B--153J
TR502	274 0144 907	Transister :BC368		R521	247 0005 905	Chip Carbon 100 ohm 1/10W	RM73B--101J
TR503	272 0101 902	Transister :BC369		R522	247 0008 960	Chip Carbon 3.3kohm 1/10W	RM73B--332J
TR504	274 0144 907	Transister :BC368		R523	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J
TR505	272 0101 902	Transister :BC369		R524	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J
TR601	269 0066 902	Transister DTC323TK	Built in Resistor	R525	247 0003 949	Chip Carbon 22 ohm 1/10W	RM73B--220J
TR602	269 0066 902	Transister DTC323TK	Built in Resistor	R526	247 0010 903	Chip Carbon 12k ohm 1/10W	RM73B--123J
TR603	269 0020 906	Transister DTC114ES	Built in Resistor	R527	247 1009 984	Chip Carbon 10 k ohm 1/8W	RM73B2B103J
TR604	269 0046 906	Transister DTA114ES	Built in Resistor	R528	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J
TR606	269 0040 902	Transister DTC144ES	Built in Resistor	R529	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J
TR607	269 0040 902	Transister DTC144ES	Built in Resistor	R530	247 0012 914	Chip Carbon 91k ohm 1/10W	RM73B--913J
TR608	269 0040 902	Transister DTC144ES	Built in Resistor	R531	247 0005 989	Chip Carbon 220 ohm 1/10W	RM73B--221J
TR609	269 0066 902	Transister DTC323TK	Built in Resistor	R532	247 0011 944	Chip Carbon 47k ohm 1/10W	RM73B--473J
TR610	269 0066 902	Transister DTC323TK	Built in Resistor	R533	247 0008 960	Chip Carbon 3.3kohm 1/10W	RM73B--332J
TR651	274 0415 003	Transister :BD935F		R534	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J
TR652	272 0102 008	Transister :BD936F		R535	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J
TR653	274 0144 907	Transister :BC368		R536	247 0009 943	Chip Carbon 6.8kohm 1/10W	RM73B--682J
TR654	273 0222 907	Transister 2SC2458(Y/GR)		R537	247 0010 961	Chip Carbon 22k ohm 1/10W	RM73B--223J
TR658	269 0020 906	Transister DTC114ES	Built in Resistor	R538	247 0005 905	Chip Carbon 100 ohm 1/10W	RM73B--101J
TR659	269 0020 906	Transister DTC114ES	Built in Resistor	R539	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J
D561	276 0432 903	Diode 1SS270A		R540	247 0009 943	Chip Carbon 6.8kohm 1/10W	RM73B--682J
D562	276 0432 903	Diode 1SS270A		R541	247 0009 956	Chip Carbon 7.5kohm 1/10W	RM73B--752J
D563	276 0432 903	Diode 1SS270A		R542	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J
D564	276 0432 903	Diode 1SS270A		R544	247 0003 949	Chip Carbon 22 ohm 1/10W	RM73B--220J
D565	276 0462 902	Zener Diode HZS6B-1	6 V	R581	247 0011 957	Chip Carbon 51k ohm 1/10W	RM73B--513J
D566	276 0462 902	Zener Diode HZS6B-1	6 V	R601	247 0007 945	Chip Carbon 1 k ohm 1/10W	RM73B--102J
D567	276 0462 902	Zener Diode HZS6B-1	6 V	R602	247 0007 945	Chip Carbon 1 k ohm 1/10W	RM73B--102J
D568	276 0462 902	Zener Diode HZS6B-1	6 V	R603	247 0007 945	Chip Carbon 1 k ohm 1/10W	RM73B--102J
D581	393 9470 009	LED	LED	R604	247 0007 945	Chip Carbon 1 k ohm 1/10W	RM73B--102J
D601	276 0462 902	Zener Diode HZS6B-1	6 V	R605	247 0007 945	Chip Carbon 1 k ohm 1/10W	RM73B--102J
D602	276 0462 902	Zener Diode HZS6B-1	6 V	R606	247 0007 945	Chip Carbon 1 k ohm 1/10W	RM73B--102J
D603	276 0432 903	Diode 1SS270A		R607	247 0012 998	Chip Carbon 200kohm 1/10W	RM73B--204J
D651	276 0553 905	Diode 1SR35-200A		R608	247 0012 998	Chip Carbon 200kohm 1/10W	RM73B--204J
D652	276 0553 905	Diode 1SR35-200A		R609	247 0013 984	Chip Carbon 470kohm 1/10W	RM73B--474J
D653	276 0553 905	Diode 1SR35-200A		R610	247 0013 984	Chip Carbon 470kohm 1/10W	RM73B--474J
D654	276 0553 905	Diode 1SR35-200A		R611	247 0014 967	Chip Carbon 1 M ohm 1/10W	RM73B--105J
D655	276 0432 903	Diode 1SS270A		R612	247 0014 967	Chip Carbon 1 M ohm 1/10W	RM73B--105J
D656	276 0462 915	Zener Diode HZS6B-2	6 V	R615	247 0011 944	Chip Carbon 47k ohm 1/10W	RM73B--473J
D801	276 0503 900	Diode 1SS198		R616	247 0011 944	Chip Carbon 47k ohm 1/10W	RM73B--473J
	393 4141 003	LCD 8233 JP	LCD	R621	247 0007 903	Chip Carbon 680 ohm 1/10W	RM73B--681J
RESISTORS GROUP (Not included Carbon Film $\pm 5\%$, 1/4W Type. Refer to the Schematic Diagram for those Parts.)				R622	247 0007 903	Chip Carbon 680 ohm 1/10W	RM73B--681J
R008	247 0018 905	Chip Carbon 0 ohm 1/10W	RM73B--0R0K	R623	247 0010 990	Chip Carbon 30k ohm 1/10W	RM73B--303J
R055	247 0018 905	Chip Carbon 0 ohm 1/10W	RM73B--0R0K	R624	247 0010 990	Chip Carbon 30k ohm 1/10W	RM73B--303J
R056	247 0018 905	Chip Carbon 0 ohm 1/10W	RM73B--0R0K	R625	247 0004 993	Chip Carbon 91 ohm 1/10W	RM73B--910J
R501	247 0004 922	Chip Carbon 47 ohm 1/10W	RM73B--470J	R626	247 0007 945	Chip Carbon 1 k ohm 1/10W	RM73B--102J
R502	247 0011 902	Chip Carbon 33k ohm 1/10W	RM73B--333J	R627	247 0012 998	Chip Carbon 200kohm 1/10W	RM73B--204J
				R628	247 0011 944	Chip Carbon 47k ohm 1/10W	RM73B--473J
				R629	247 0011 944	Chip Carbon 47k ohm 1/10W	RM73B--473J
				R630	247 0011 944	Chip Carbon 47k ohm 1/10W	RM73B--473J
				R631	247 0011 944	Chip Carbon 47k ohm 1/10W	RM73B--473J

CD PLAYER SECTION

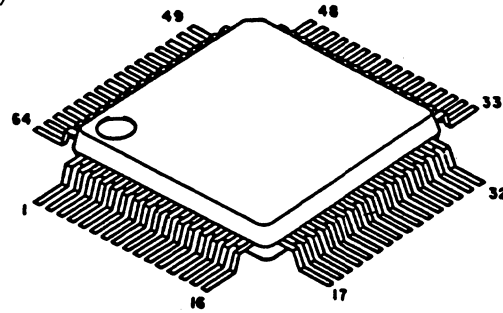
Ref. No.	Part No.	Part Name	Remarks	Ref. No.	Part No.	Part Name	Remarks
R633	247 0004 977	Chip Carbon 75 ohm 1/10W	RM73B--750J	C525	254 4260 964	Electrolytic 3.3μF/50 V	CE04D1H3R3M
R634	247 0005 905	Chip Carbon 100 ohm 1/10W	RM73B--101J	C525	254 4252 930	Electrolytic 100μF/10 V	CE04W1A101M
R635	247 0005 905	Chip Carbon 100 ohm 1/10W	RM73B--101J	C526	254 4250 929	Electrolytic 100μF/6.3 V	CE04W0J101M
R636	247 0007 945	Chip Carbon 1 k ohm 1/10W	RM73B--102J	C527	257 0010 900	Chip Ceramic 0.01μF/50 V	CK73B1H103K
R637	247 0005 963	Chip Carbon 180 ohm 1/10W	RM73B--181J	C528	254 4254 938	Electrolytic 47μF/16 V	CE04W1C470M
R638	247 0005 963	Chip Carbon 180 ohm 1/10W	RM73B--181J	C529	257 1011 995	Chip Ceramic 0.056μF/50 V	CK73B1H563K
R639	247 0018 905	Chip Carbon 0 ohm 1/10W	RM73B--0R0K	C530	257 0010 955	Chip Ceramic 0.027μF/50 V	CK73B1H273K
R654	247 0007 945	Chip Carbon 1 k ohm 1/10W	RM73B--102J	C531	256 1034 995	Metalized 0.15μF/50 V	CF93A1H154J
R655	247 0018 905	Chip Carbon 0 ohm 1/10W	RM73B--0R0K	C532	254 4254 912	Electrolytic 22μF/16 V	CE04W1C220M
R656	247 0011 944	Chip Carbon 47k ohm 1/10W	RM73B--473J	C533	254 4260 919	Electrolytic 0.22μF/50 V	CE04W1HR22M
R657	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J	C534	257 0008 983	Chip Ceramic 0.22μF/50 V	CE04W1HR22M
R658	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J	C535	257 0006 901	Chip Ceramic 390 pF/50 V	CC73SL1H391J
R659	247 0011 944	Chip Carbon 47k ohm 1/10W	RM73B--473J	C536	257 0010 900	Chip Ceramic 0.01μF/50 V	CK73B1H103K
R660	247 0011 944	Chip Carbon 47k ohm 1/10W	RM73B--473J	C581	257 0006 969	Chip Ceramic 680 pF/50 V	CC73SL1H681J
R664	247 0011 944	Chip Carbon 47k ohm 1/10W	RM73B--473J	C582	254 4193 947	Electrolytic 100μF/16 V	CE04W1C101M(SRA)
R667	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J	C590	257 0014 935	Chip Ceramic 0.1μF/25 V	CK73F1E104K
R681	247 0008 960	Chip Carbon 3.3kohm 1/10W	RM73B--332J	C601	257 1009 923	Chip Ceramic 330 pF/50 V	CK73B1H331K
R682	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J	C602	257 0010 900	Chip Ceramic 0.01μF/50 V	CK73B1H103K
R683	247 0009 943	Chip Carbon 6.8kohm 1/10W	RM73B--682J	C604	254 4254 930	Electrolytic 100μF/10 V	CE04W1A101M
R684	247 0008 928	Chip Carbon 2.2kohm 1/10W	RM73B--222J	C605	254 4254 930	Electrolytic 100μF/10 V	CE04W1A101M
R685	247 0008 928	Chip Carbon 2.2kohm 1/10W	RM73B--222J	C606	255 4235 963	Plastic Film 0.0056μF/100V	CQ93P2A562J(NH)
R686	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J	C607	255 4235 963	Plastic Film 0.0056μF/100V	CQ93P2A562J(NH)
R687	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J	C608	253 4456 908	Ceramic 680 pF/50 V	CC45SL1H681J
R689	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J	C610	253 4456 908	Ceramic 680 pF/50 V	CC45SL1H681J
R690	247 0014 967	Chip Carbon 1 M ohm 1/10W	RM73B--105J	C612	254 4313 918	Electrolytic 10μF/50 V	CE04W1H100M(ASF)
R692	247 0008 915	Chip Carbon 2 k ohm 1/10W	RM73B--202J	C613	254 4313 918	Electrolytic 10μF/50 V	CE04W1H100M(ASF)
R693	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J	C614	257 0006 927	Chip Ceramic 470 pF/50 V	CC73SL1H471J
R694	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J	C615	257 0006 927	Chip Ceramic 470 pF/50 V	CC73SL1H471J
R695	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J	C616	257 0010 900	Chip Ceramic 0.01μF/50 V	CK73B1H103K
R696	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J	C618	257 0006 927	Chip Ceramic 470 pF/50 V	CC73SL1H471J
R698	247 0009 985	Chip Carbon 10k ohm 1/10W	RM73B--103J	C619	257 0006 927	Chip Ceramic 470 pF/50 V	CC73SL1H471J
R725	247 0018 905	Chip Carbon 0 ohm 1/10W	RM73B--0R0K	C620	253 1146 907	Ceramic 0.01μF/50 V	CK45F1H103Z
R726	247 0018 905	Chip Carbon 0 ohm 1/10W	RM73B--0R0K	C621	253 4452 902	Ceramic 470 pF/50 V	CC45SL1H471J
R727	247 0018 905	Chip Carbon 0 ohm 1/10W	RM73B--0R0K	C623	254 4260 948	Electrolytic 1μF/50 V	CE04W1H010M
R801	247 0018 905	Chip Carbon 0 ohm 1/10W	RM73B--0R0K	C625	254 4254 925	Electrolytic 33μF/16 V	CE04W1C330M
R802	247 0012 927	Chip Carbon 100kohm 1/10W	RM73B--104J	C626	254 0004 961	Chip Ceramic 100 pF/50 V	CC73SL1H101J
VR501	211 6087 931	Semi Fixed Resistor 4.7k ohm	V06PB472	C627	254 4254 954	Electrolytic 220μF/16 V	CE04W1C221M
VR502	211 6087 928	Semi Fixed Resistor 100k ohm	V06PB104	C651	257 1011 908	Chip Ceramic 0.01μF/50 V	CK73B1H103K
VR601	211 6087 928	Semi Fixed Resistor 100k ohm	V06PB104	C652	257 1011 908	Chip Ceramic 0.01μF/50 V	CK73B1H103K
VR602	211 6087 928	Semi Fixed Resistor 100k ohm	V06PB104	C653	257 1011 908	Chip Ceramic 0.01μF/50 V	CK73B1H103K
CAPACITORS GROUP				C654	257 0010 900	Chip Ceramic 0.01μF/50 V	CK73B1H103K
C501	257 0010 900	Chip Ceramic 0.01μF/50 V	CK73B1H103K	C655	257 0010 900	Chip Ceramic 0.01μF/50 V	CK73B1H103K
C502	254 4250 929	Electrolytic 100μF/6.3 V	CE04W0J101M	C656	257 0010 900	Chip Ceramic 0.01μF/50 V	CK73B1H103K
C503	257 0008 983	Chip Ceramic 1000 pF/50 V	CK73B1H102K	C658	254 4255 704	Electrolytic 3300μF/16 V	CE04W1C332MC
C504	254 4260 935	Electrolytic 0.47μF/50 V	CE04W1HR47M	C659	254 4255 704	Electrolytic 3300μF/16 V	CE04W1C332MC
C505	254 4254 909	Electrolytic 10μF/16 V	CE04W1C100M	C660	254 4260 948	Electrolytic 1μF/50 V	CE04W1H010M
C506	257 0004 987	Chip Ceramic 120 pF/50 V	CC73SL1H121J	C661	254 4260 964	Electrolytic 3.3μF/50 V	CE04W1H3R3M
C507	254 4254 909	Electrolytic 10μF/16 V	CE04W1C100M	C662	254 4254 954	Electrolytic 220μF/16 V	CE04W1C221M
C508	257 0009 937	Chip Ceramic 2700 pF/50 V	CK73B1H272K	C663	254 4254 954	Electrolytic 220μF/16 V	CE04W1C221M
C509	254 4254 909	Electrolytic 10μF/16 V	CE04W1C100M	C665	254 4254 941	Electrolytic 100μF/16 V	CE04W1C101M
C510	257 0011 967	Chip Ceramic 0.033μF/25 V	CK73B1E333K	C666	257 0010 900	Chip Ceramic 0.01μF/50 V	CK73B1H103K
C511	257 0009 924	Chip Ceramic 2200 pF/50 V	CK73B1H222K	C681	253 1146 907	Ceramic 0.01μF/50 V	CK45F1H103Z
C512	257 0010 926	Chip Ceramic 0.015μF/50 V	CK73B1H153K	C682	257 0001 951	Chip Ceramic 3 pF/50 V	CC73SL1H3R0C
C513	254 4254 909	Electrolytic 10μF/16 V	CE04W1C100M	C683	257 0001 977	Chip Ceramic 5 pF/50 V	CC73SL1H5R0C
C514	254 4260 935	Electrolytic 0.47μF/50 V	CE04W1HR47M	C684	257 1011 982	Chip Ceramic 0.047μF/50 V	CK73B1H473K
C515	257 0010 900	Chip Ceramic 0.01μF/50 V	CK73B1H103K	C685	257 0009 908	Chip Ceramic 1500 pF/50 V	CK73B1H152K
C516	257 0008 983	Chip Ceramic 1000 pF/50 V	CK73B1H102K	C686	257 0010 900	Chip Ceramic 0.01μF/50 V	CK73B1H103K
C517	257 0010 900	Chip Ceramic 0.01μF/50 V	CK73B1H103K	C687	254 4250 932	Electrolytic 220μF/6.3 V	CE04W0J221M
C518	257 0010 900	Chip Ceramic 0.01μF/50 V	CK73B1H103K	C688	254 4250 929	Electrolytic 100μF/6.3 V	CE04W0J101M
C519	254 4260 948	Electrolytic 1μF/50 V	CE04W1H010M	C689	257 0010 900	Chip Ceramic 0.01μF/50 V	CK73B1H103K
C520	257 0009 979	Chip Ceramic 5600 pF/50 V	CK73B1H562K	C690	253 1146 907	Ceramic 0.01μF/50 V	CK45F1H103Z
C521	254 4260 919	Electrolytic 0.22μF/50 V	CE04W1HR22M	C695	254 4260 948	Electrolytic 1μF/50 V	CE04W1H010M
C522	254 4254 909	Electrolytic 10μF/16 V	CE04W1C100M	C801	257 0010 900	Chip Ceramic 0.01μF/50 V	CK73B1H103K
C523	257 0009 979	Chip Ceramic 5600 pF/50 V	CK73B1H562K	C803	257 0010 900	Chip Ceramic 0.01μF/50 V	CK73B1H103K
C524	257 0010 942	Chip Ceramic 0.022μF/50 V	CK73B1H223K	C804	257 0004 961	Chip Ceramic 100 pF/50 V	CC73SL1H101J
				C805	254 4260 948	Electrolytic 1μF/50 V	CE04W1H010M
				C807	254 4260 948	Electrolytic 1μF/50 V	CE04W1H010M

Ref. No.	Part No.	Part Name	Remarks
C807	257 0010 942	Chip Ceramic 0.022μF/50 V	CK73B1H223K
C808	257 0010 942	Chip Ceramic 0.022μF/50 V	CK73B1H223K
OTHERS GROUP			
L601	235 0049 900	(P.W.Board) Beads Inductor Tape	1
L602	235 0049 900	Beads Inductor Tape	1
	212 5604 910	Tact Switch	11
	449 0057 009	LCD Holder	1
	417 0307 008	Heat Sink	1
	470 0012 022	Pin Screw 3X12 with SW.W	2
X681	399 0112 005	Crystal (16.934MHz)	1
X682	399 9018 003	Ceramic Vibrator	1
T601	231 8063 009	Pulse Trans	1
JK601	204 8421 005	Mini Jack	1
JK602	204 8421 005	Mini Jack	1
JK603	204 8413 000	2 P Pin Jack(C-GND)	1
JK604	204 8366 005	1 P Pin Jack	1
JK654	204 2429 003	7 P System Socket	1
CN581	204 2513 029	7 P KR-DA Conn. Cord	1
CN561	204 2561 000	9 P KR-DA Conn. Cord	1
CN651	204 6286 035	12 P PH-SAN Conn. Cord	1
CB501	205 0343 074	7 P Conn. Base(KR-PH)	1
CB502	205 0343 087	8 P Conn. Base(KR-PH)	1
CB503	205 0343 061	6 P Conn. Base(KR-PH)	1
CB504	205 0343 058	5 P Conn. Base(KR-PH)	1
CB561	205 0343 090	9 P Conn. Base(KR-PH)	1
CB581	205 0343 074	7 P Conn. Base(KR-PH)	1
CB651	205 0375 026	12 P Conn. Base(KR-PH)	1
TP501	205 0133 022	2 P NH Conn. Base	1
TP502	205 0133 022	2 P NH Conn. Base	1
TP503	205 0133 022	2 P NH Conn. Base	1
	205 0452 004	Style Pin	2
	203 0374 021	1 P SIN Conn. Assy	1
	203 0340 068	1 P Contact Assy	1
CB653	205 0233 032	3 P EH Conn. Base	1
CB655	205 0581 001	2 P VH Conn. Base	1
CB655	205 0624 007	2 P AC Conn. Base	1

CD PLAYER SECTION

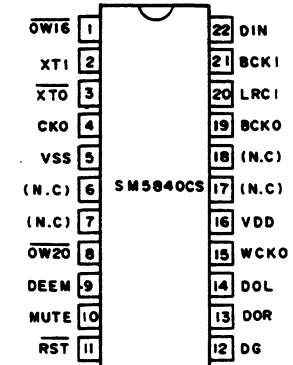
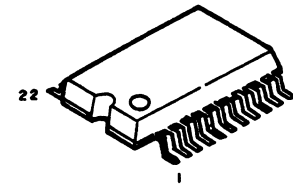
● IC's

HA12158 (IC501)

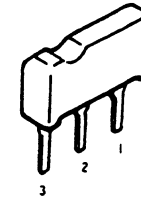


SEMICONDUCTORS

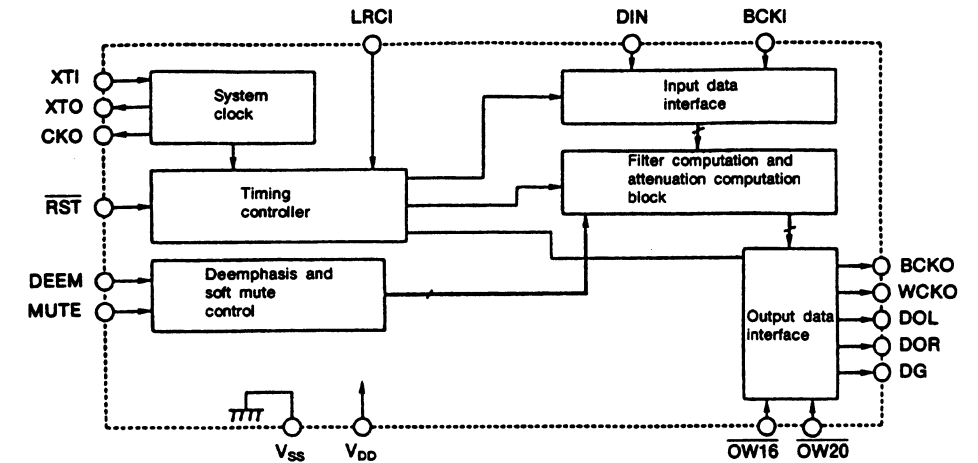
SM5840CS (IC601)



MN1280S (IC683)



1 : Output
2 : V_{DD}
3 : GND



● Pin Description

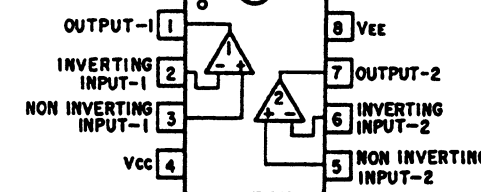
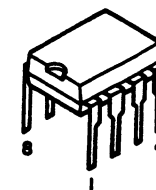
Pin number DIP	Pin name	I/O	Function
1	OW16	ip	Selection pin 1 for number of output bits (NOTE) NS-ON : Noise shaper on NS-OFF : Noise shaper off
2	XTI	i	Oscillator input pin
3	XTO	o	Oscillator output pin
4	CKO	o	Oscillator output clock (Frequency is the same as XTI)
5	VSS	-	Ground pin
6	OW20	ip	Selection pin 2 for number of output bits (NOTE) See the column of OW16.
7	DEEM	ip	Deemphasis signal input
8	MUTE	ip	Mute signal input
9	RST	ip	System reset (Initialization)
10	DG	o	Degitch output
11	DOR	o	Right channel data output
12	DOL	o	Left channel data output
13	WCKO	o	Output word clock
14	VDD	-	Supply pin (5 V : Standard)
15	BCKO	o	Output bit clock
16	LRCI	ip	Clock of the input data sample rate (fs)
17	BCKI	ip	Input bit clock
18	DIN	ip	Input data

i : Input pin ip : Input pin with pull-up resistor o : Output pin

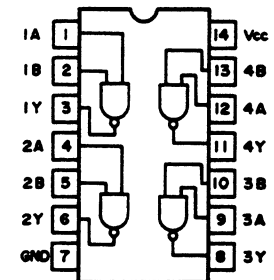
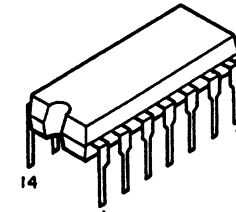
● Pin function table

Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	TG2	I	TG2 switch	29	LMSW	I	Limit switch input
2	TS1	I	TSA1 ⊖ input	30	LDSW	I	Laser switch input
3	TS10	O	TSA1 output	31	FOK	O	FOK comparator output
4	TS2	I	TSA2 ⊖ input	32	GEFM	GND	EFM comparator ground
5	TS20	O	TSA2 output	33	EFMC	O	EFM comparator output
6	TM2	I	TM2 input	34	VEFM	Vcc	EFM comparator Vcc
7	SS	I	SSA ⊖ input	35	DSLCL	I	Data slice level control input
8	SSO	O	SSA output	36	DFIN	I	Defect comparator input
9	MIRR	O	Mirror comparator output	37	DFO	O	Defect signal output
10	FE	I/O	Focus error signal output, FS4 input	38	DFH	O	Defect hold signal output
11	SG	GND	Servo block ground	39	MIRH	O	Error hold signal output
12	FS	I	SSA ⊖ input	40	EFMI	I	EFM signal output
13	FSO	O	FSA input	41	MD	I	APC amplifier input
14	SVCC	Vcc	Servo block Vcc	42	LD	O	APC amplifier output
15	FUD	O	Focus up/down voltage output	43	BYPS	O	Capacitor connection pin for ripple filter
16	VCR	I/O	VCO reference voltage	44	ISSET	O	Reference current setting
17	PDIN	I	VCO control voltage input	45	RFO	O	RFS output
18	FRA	O	VCO free-run frequency setting	46	RF	I	RFS ⊖ input
19	VVcc	Vcc	VCO Vcc	47	PVcc	Vcc	Pre-block Vcc
20	VCO	O	VCO output	48	RF1	I	RF1 (I/V conversion block) input
21	VGND	GND	VCO ground	49	RF2	I	RF2 (I/V conversion block) input
22	COUT	O	Track count signal output	50	VREF	O	Reference voltage output
23	SENS	O	FZC and TZC signal output	51	TR1	I	TR1 (I/V conversion amplifier) input
24	XRST	I	Reset signal output	52	TR2	I	TR2 (I/V conversion amplifier) input
25	DIRC	I	Direct control signal output	53	PG	GND	Preamplifier block ground
26	XLT	I	Data transfer signal input	54	FH	O	Focus error hold signal output
27	DATA	I	Data signal input	55	TE	I/O	Track error signal output, TMI input
28	CLK	I	Data sync clock input	56	TG1	I	TG1 switch

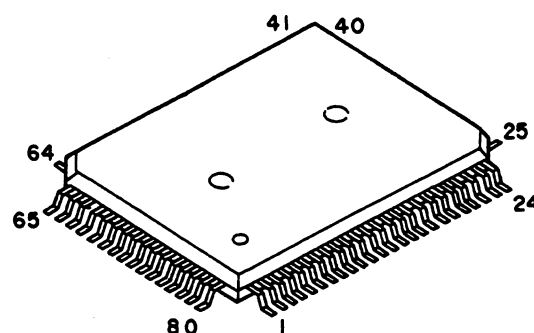
BA15218 (IC503)



HD74HC00P (IC602)



CD PLAYER SECTION



CXD2500AQFP (IC681)

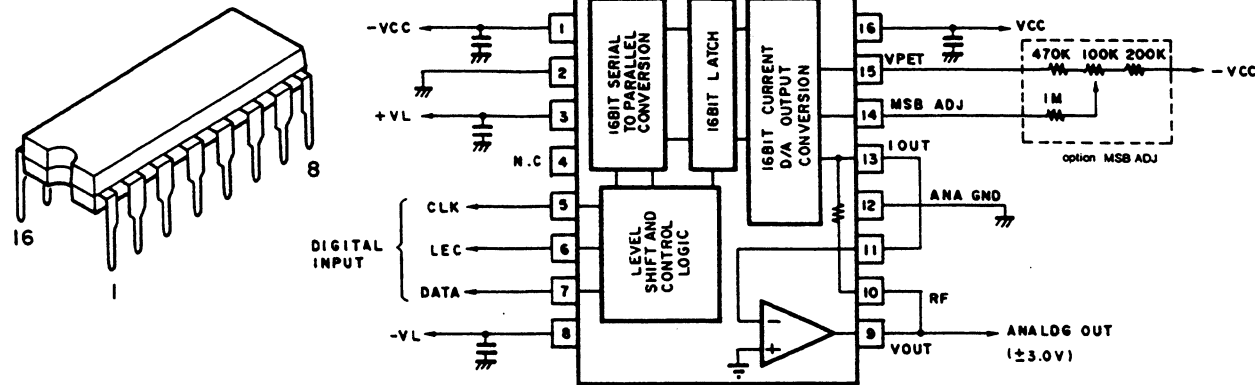
● CXD2500AQFP Pin Function Table

Pin no.	Pin symbol	I/O	Pin description
1	FOK	I	Focus OK input pin. Used in SENS output and the servo auto sequencer.
2	FSW	O	Output filter switching output of the spindle motor.
3	MON	O	On-off control output of the spindle motor.
4	MDP	O	Servo control of the spindle motor.
5	MDS	O	Servo control of the spindle motor.
6	LOCK	O	Samples GFS at 460 Hz. When GFS is "H", H is output. L is output when there is "L", 8 times in succession.
7	NC	—	
8	VCOO	O	Oscillation circuit output for analog EFM PLL.
9	VCOI	I	Oscillation circuit output for analog EFM PLL. $f_{\text{lock}} = 8.6436 \text{ MHz}$.
10	TEST	I	Test pin, always grounded.
11	PDO	O	For charge pump used with analog EFM PLL.
12	Vss		Ground
13	NC	—	
14	NC	—	
15	NC	—	
16	VPCO	O	PLL charge pump output used for vari-pitch.
17	VCKI	O	Clock input f_{CENTER} from the external VCO for varipitch equals 16.9344 MHz.
18	FILO	O	Filter output (slave = digital PLL) for master PLL.
19	FILI	I	Filter input for master PLL.
20	PCO	O	Charge pump output for master PLL.
21	AVss		Analog ground.
22	CLTV	I	VCO control voltage input for master.
23	AVDD		Analog supply (+5 V)
24	RF	I	EFM signal input
25	TEST2	I	Grounded
26	TEST3	I	Grounded
27	ASYO	O	EFM full-swing output. (L = Vss, H = VDD)
28	TEST4	I	Grounded
29	NC	—	
30	PSSL	I	Switching input for the audio data output mode. Serial output with "L" and parallel output with "H".
31	WDCK	O	D/A interface for 48-bit slot. Word clock $f = 2Fs$.
32	LRCK	O	D/A interface for 48-bit slot. LR clock $f = Fs$.
33	VDD		Supply (+5 V)

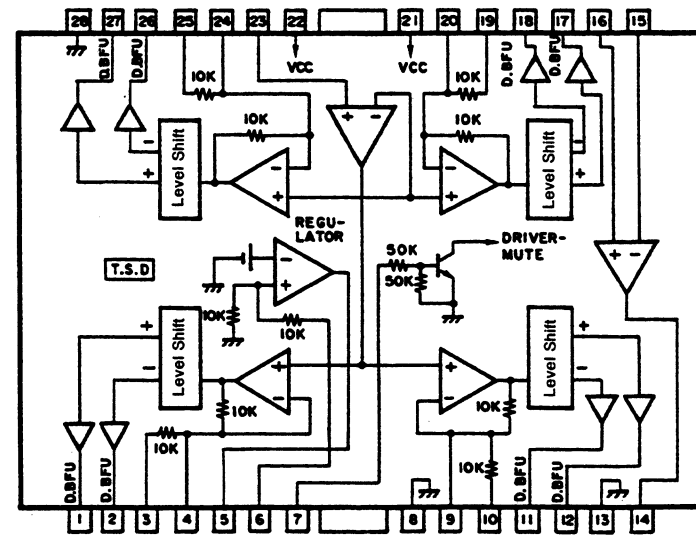
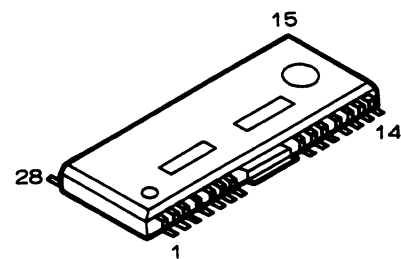
Pin no.	Pin symbol	I/O	Pin description
34	DA16	O	DA16 (MSB) output when PSSL = 1. Serial data of the 48-bit slot when PSSL = 0. (2s' COMP, MSB first.)
35	DA15	O	DA15 output when PSSL = 1. Bit clock of the 48-bit slot when PSSL = 0.
36	DA14	O	DA14 output when PSSL = 1. Serial data of the 64-bit slot when PSSL = 0. (2s' COMP, LSB first.)
37	DA13	O	DA13 output when PSSL = 1. Bit clock of the 64-bit slot when PSSL = 0.
38	DA12	O	DA12 output when PSSL = 1. LR clock of the 64-bit slot when PSSL = 0.
39	DA11	O	DA11 output when PSSL = 1. GTOF output when PSSL = 0.
40	DA10	O	DA10 output when PSSL = 1. XUGF output when PSSL = 0.
41	DA09	O	DA09 output when PSSL = 1. XPLCK output when PSSL = 0.
42	DA08	O	DA08 output when PSSL = 1. GFS output when PSSL = 0.
43	DA07	O	DA07 output when PSSL = 1. RFCK output when PSSL = 0.
44	DA06	O	DA06 output when PSSL = 1. C2P0 output when PSSL = 0.
45	DA05	O	DA05 output when PSSL = 1. XRAOF output when PSSL = 0.
46	DA04	O	DA04 output when PSSL = 1. MNT3 output when PSSL = 0.
47	DA03	O	DA03 output when PSSL = 1. MNT2 output when PSSL = 0.
48	DA02	O	DA02 output when PSSL = 1. MNT1 output when PSSL = 0.
49	DA01	O	DA01 output when PSSL = 1. MNT0 output when PSSL = 0.
50	APTR	O	Control output for aperture correction. "H" with Rch.
51	APTL	O	Control output for aperture correction. "H" with Lch.
52	Vss		Ground
53	XTAI	I	16.9344 MHz x'tal oscillator circuit input. Or 33.8688 MHz input.
54	XTAO	O	16.9344 MHz x'tal oscillator circuit input.
55	XTSL	I	X'tal selection input pin. "L" when the x'tal is 16.9344 MHz and "H" when the x'tal is 33.8688 MHz.
56	FSTT	O	2/3 frequency division output of pins 53 and 54. Does not change with vari-pitch.
57	C4M	O	4.2336 MHz output. Changes simultaneously when varypitch is applied.
58	C16M	O	16.9344 MHz output. Changes simultaneously when varypitch is applied.
59	MD2	I	Digital-Out on/off control. H when on and L when off.
60	DOUT	O	Digital-out output pin.
61	EMPH	O	When the playback disc has emphasis, "H" is output. "L" is output when there is no emphasis.
62	WFCK	O	WFCK (Write Frame Clock) output.
63	SCOR	O	"H" output when either sub code sync S0 or S1 is detected.
64	SBSO	O	Sub P through W serial output.
65	EXCK	I	Clock input for SBSO read-out use.
66	SQSO	O	SubQ 80 bit and PCM peak level data 16-bit output.
67	SQCK	I	Clock input for SQSO read-out use.
68	MUTE	I	Mute L is cancelled with H.
69	SENS	—	SENS output. Output to CPU.
70	XRST	I	System set. Reset with "L".
71	DATA	I	Serial data input from CPU.
72	XLAT	I	Latch input from CPU. Latches serial data on the fall.
73	VDD		Supply (+5 V)
74	CLOCK	I	Serial data transfer clock input from CPU.
75	SEIN	I	Sense input from SSP.
76	CNIN	O	Count signal input of number of track jumps.
77	DATO	O	Serial data output to SSP.
78	XLTO	O	Serial data latch output to SSP. Latches on the fall.
79	CLKO	O	Serial data transfer clock output to SSP.
80	MIRR	I	Mirror signal input. Used in jumps of 128 tracks or more with an auto sequencer.

CD PLAYER SECTION

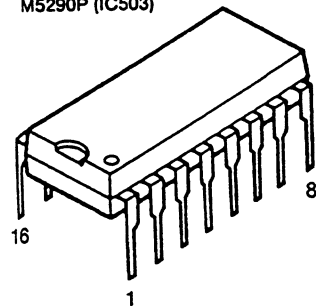
PCM61P-L (IC203, 204)



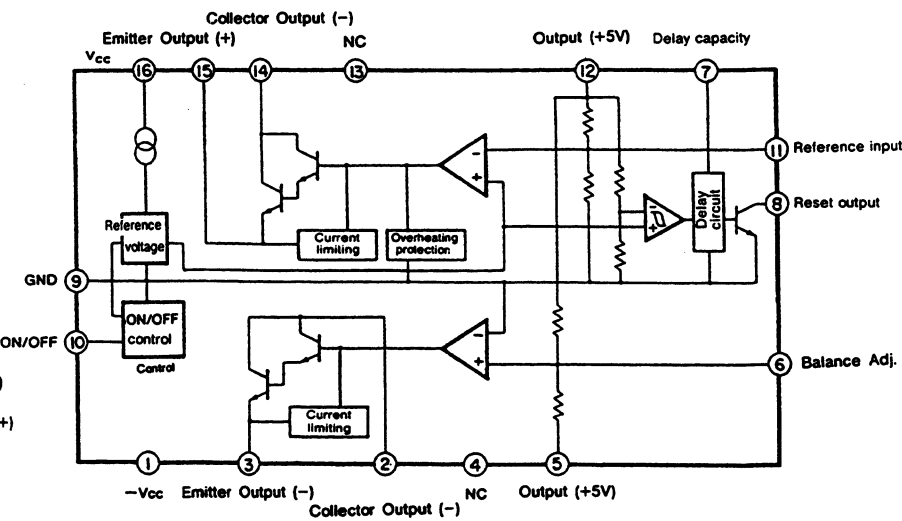
BA6296FP (IC502)



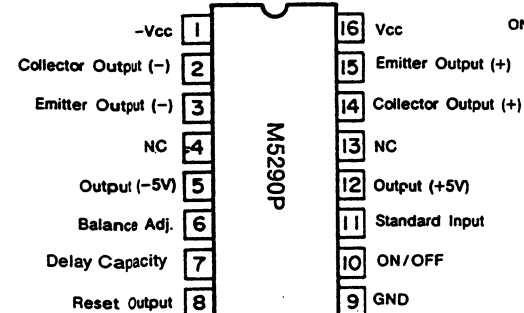
M5290P (IC503)



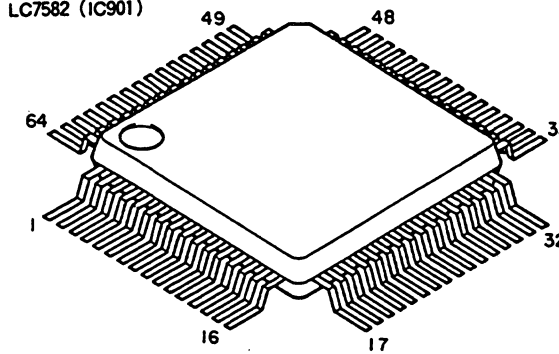
BLOCK DIAGRAM



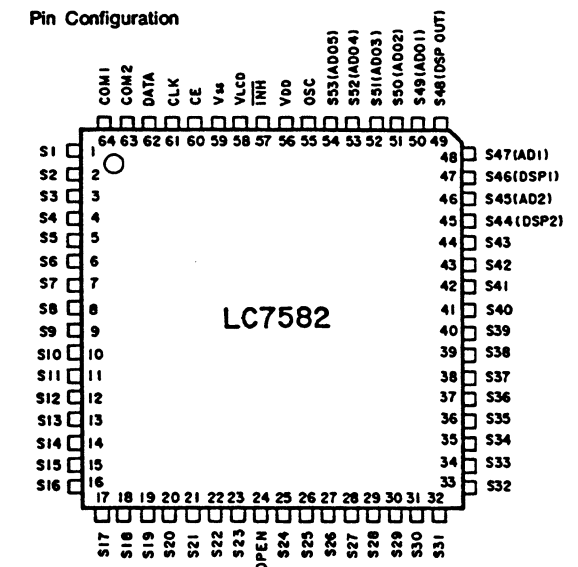
● IC PROTECTOR ICP-N15 (IC501, 502)



LC7582 (IC901)

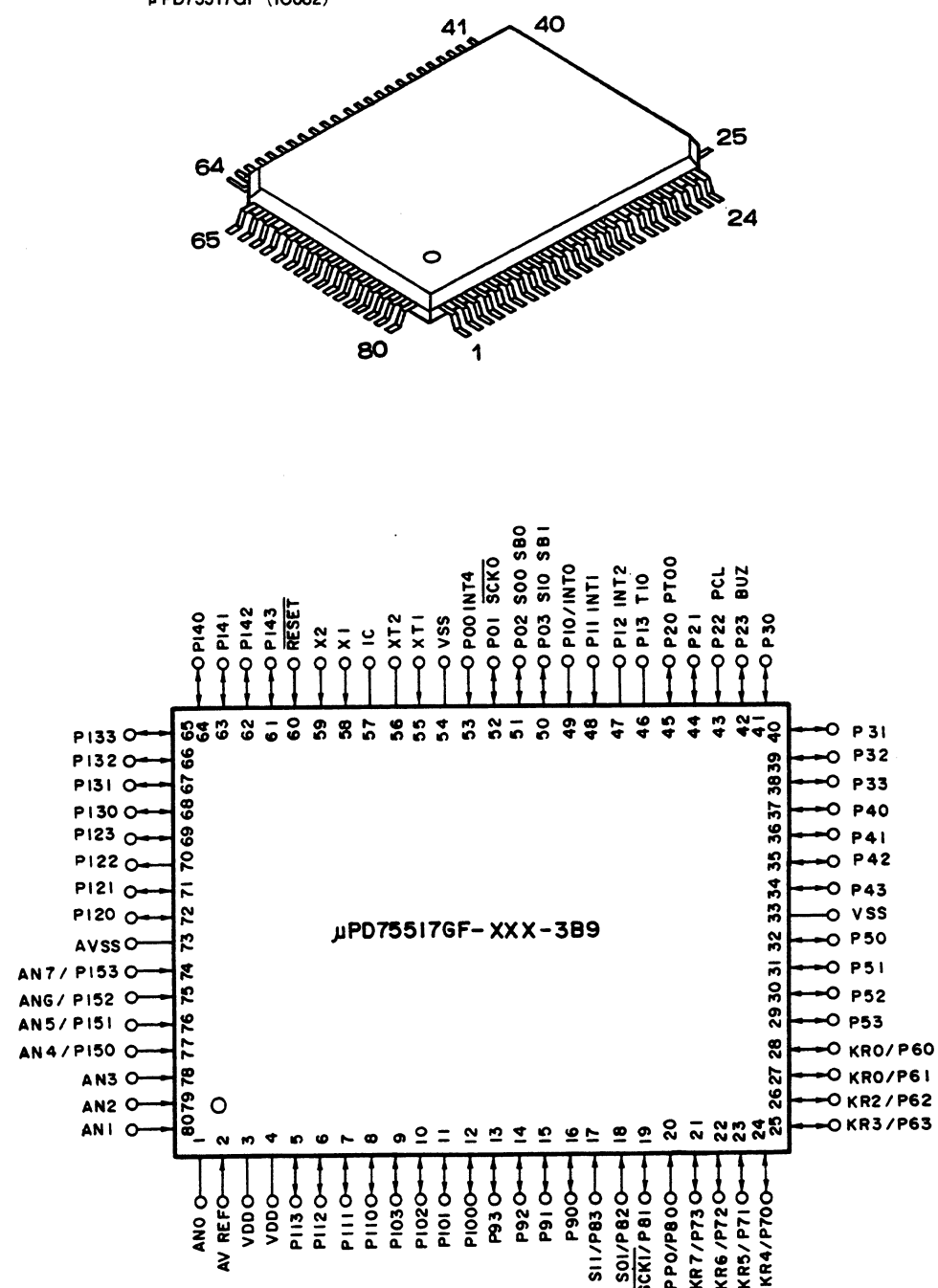


Pin Configuration



CD PLAYER SECTION

μPD75517GF (IC682)



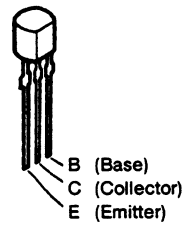
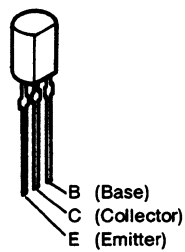
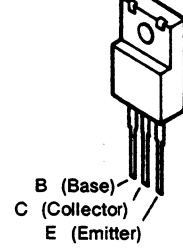
● Pin Description

No.	Board Name	Function Name	Function	No.	Board Name	Function Name	Function
1	AN0	NC	Ground (In)	42	P23/BUZ	PSVCDATA OUT	Data output for the servo control signal and D and F.
2	AVref	NC	Ground (In)	43	P22/PCL	PSVCXLT OUT	Servo control signal latch output
3	VDD		5 V	44	P21	PSVCCLK	Clock output for the servo control signal and D and F.
4	VDD		5 V	45	P20/PT00	PLASER OUT	Laser on/off control output
5	P113	NC	Open (Out)	46	P13/T10	PSENSE IN	Servo condition detection signal input
6	P112	PPLYON	PLAY indication	47	P12/INT2	PGFS IN	Rotation sync signal input from DSP
7	P111	PAUTO	AUTO, OFF indication	48	P11/INT1	PSCOR IN	Sub code sync signal input
8	P110	PDPLAY	PLAY indication	49	P10/INT0	SERIAL SIG IN	Denon bus input
9	P103	XRST OUT	Reset signal for DSP	50	P03/SI0	PSUBQ IN	Sub code data input
10	P102	POWER OFF OUT	Output for power on/off control	51	P02/S00	NC	Open (Out)
11	P101	DIGITAL OFF OUT	Output for digital on/off control	52	P01/SCK0	PSQCK OUT	Clock output for sub code reading
12	P100	STANDBY OUT	Output for power on/off control	53	P00/INT4	50/60 IN	50 Hz/60 Hz input
13	P93	PINITIAL	Test pin (Open)	54	VSS		Ground
14	P92	PEDIT	Test pin (Open)	55	XT1	NC	Ground
15	P91	PSEARCH	Test pin (Open)	56	XT2	NC	Open
16	P90	PDOUT	Test pin (Open)	57	IC	NC	Ground
17	P83/S11	NC	Ground (In)	58	X1		4 MHz Cell lock
18	P82/S01	PLCDDATA	Data for the LCD	59	X2		4 MHz Cell lock
19	P81/SCK1	PLCDCLK	Clock for the LCD	60	RESET		Reset signal input
20	P80/PPO	NC	Ground (In)	61	P143	PFOK IN	Focus OK signal input
21	P73/KR7	KS3 OUT	Key scan output	62	P142	PSWOP IN	Loader open position detection
22	P72/KR6	KS2 OUT	Key scan output	63	P141	PSWCL IN	Loader close position detection
23	P71/KR5	KS1 OUT	Key scan output	64	P140	PSWPMD IN	Pickup inner track position detection
24	P70/KR4	KS0 OUT	Key scan output	65	P133	PMVCL OUT	Loader drive signal
25	P63/KR3	KS7 OUT	Key scan output	66	P132	PMVOP OUT	Loader drive signal
26	P62/KR2	KS6 OUT	Key scan output	67	P131	D. MUTE OUT	Muting output for the LSI
27	P61/KR1	KS5 OUT	Key scan output	68	P130	SERIAL SIG OUT	Denon bus output
28	P60/KR0	KS4 OUT	Key scan output	69	P123	PDFLATCH OUT	Latch output for D and F
29	P53	KS8 OUT	Key scan output	70	P122	A. MUTE OUT	Audio muting output
30	P52	KS9 OUT	Key scan output	71	P121	PEMPHA OUT	Signal output with emphasis control
31	P51	G1	Open (Out)	72	P120	PDIRC OUT	Servo control signal output
32	P50	G2	Open (Out)	73	AVSS	NC	Ground
33	VSS		Ground (In)	74	AN7/P153	KR0 IN	Key return input
34	P43	CD ON/OFF IN	Input for digital on/off control	75	AN6/P152	KR1 IN	Key return input
35	P42	A.P. SEL IN	Selects the auto power on/off function	76	AN5/P151	KR2 IN	Key return input
36	P41	NC	Ground (In)	77	AN4/P150	KR3 IN	Key return input
37	P40	NC	Ground (In)	78	AN3	NC	Ground (In)
38	P33	PLCDOFF OUT	INH for the LCD	79	AN2	NC	Ground (In)
39	P32	PLCDCE OUT	CE for the LCD	80	AN1	NC	Ground (In)
40	P31	G3	Open (Out)				
41	P30	G4	Open (Out)				

CD PLAYER SECTION

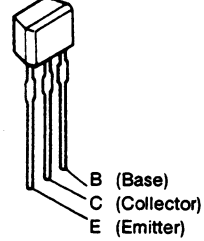
● Transistors

2SA1015 (GR)

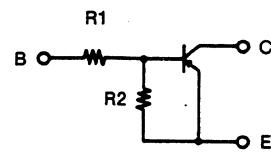
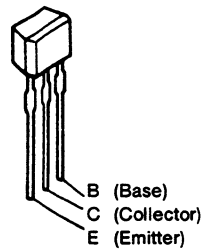
2SB562 (C)
2SD468 (C)2SB1274
2SD1913

PNP Type

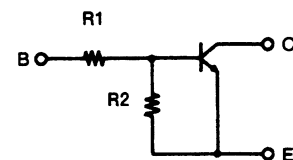
2SC2458 (Y/GR)



NPN Type

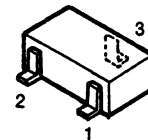
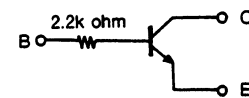
DTA114ES PNP Type
DTC114ES } NPN Type
DTC144ES

	R1	R2
DTA114ES	10k ohm	10k ohm



	R1	R2
DTC114ES	10k ohm	10k ohm
DTC144ES	47k ohm	47k ohm

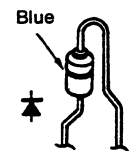
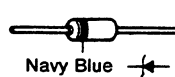
DTC323TK

1: GND / Emitter
2: In / Base
3: Out / Collector

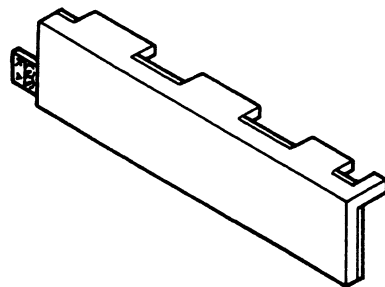
● Diodes

1SS270
1SS270A1SS270 : Light Blue
1SS270A : Navy Blue

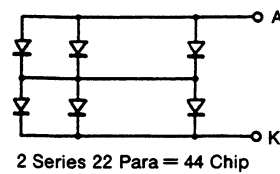
1SR35-200A

HZS6A-1
HZS6B-1

● LED ASS'Y

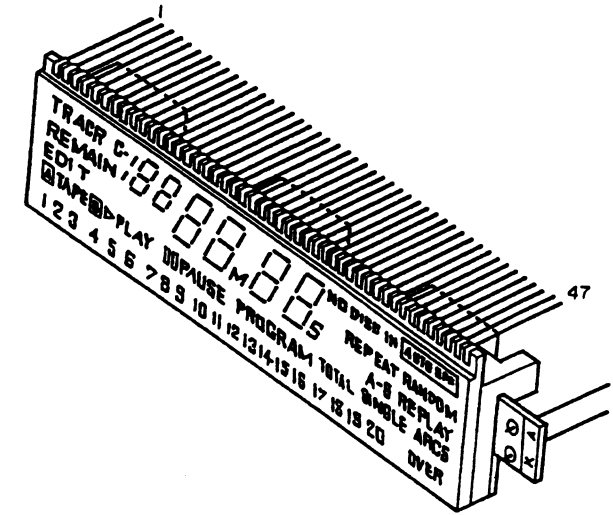
SLF-351D
Part No. 3939470009 (D581)

● Connection



● LCD ASS'Y (8233JP)

Part No. 3934141003



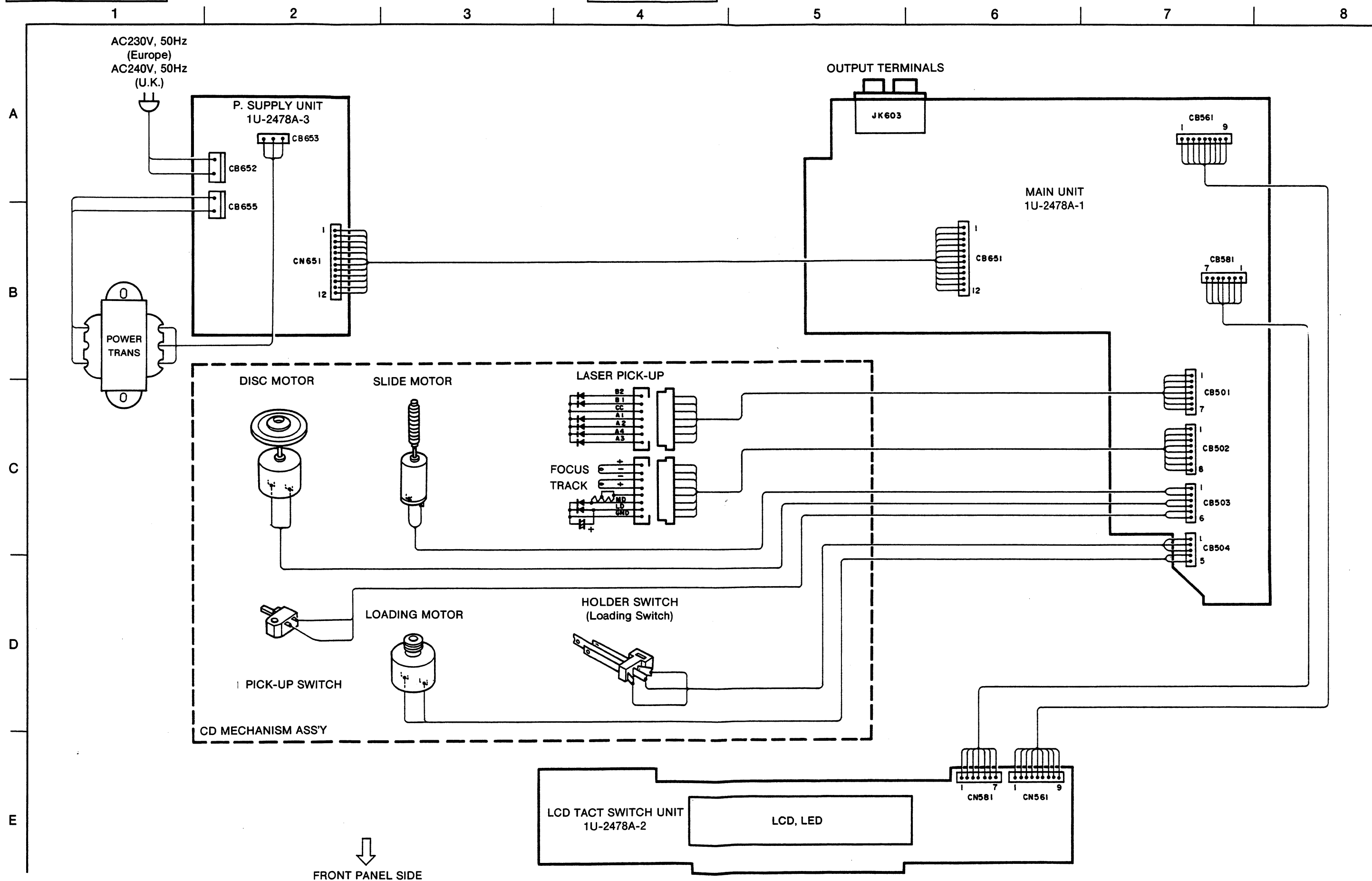
TRACK C- 18888 M 88 S NO DISC IN AUTO OFF
REMAIN EDIT REPEAT RANDOM
EDIT A-B REPLAY
[A] TAPE [B] ▷PLAY II PAUSE PROGRAM TOTAL SINGLE ARCS
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 OVER

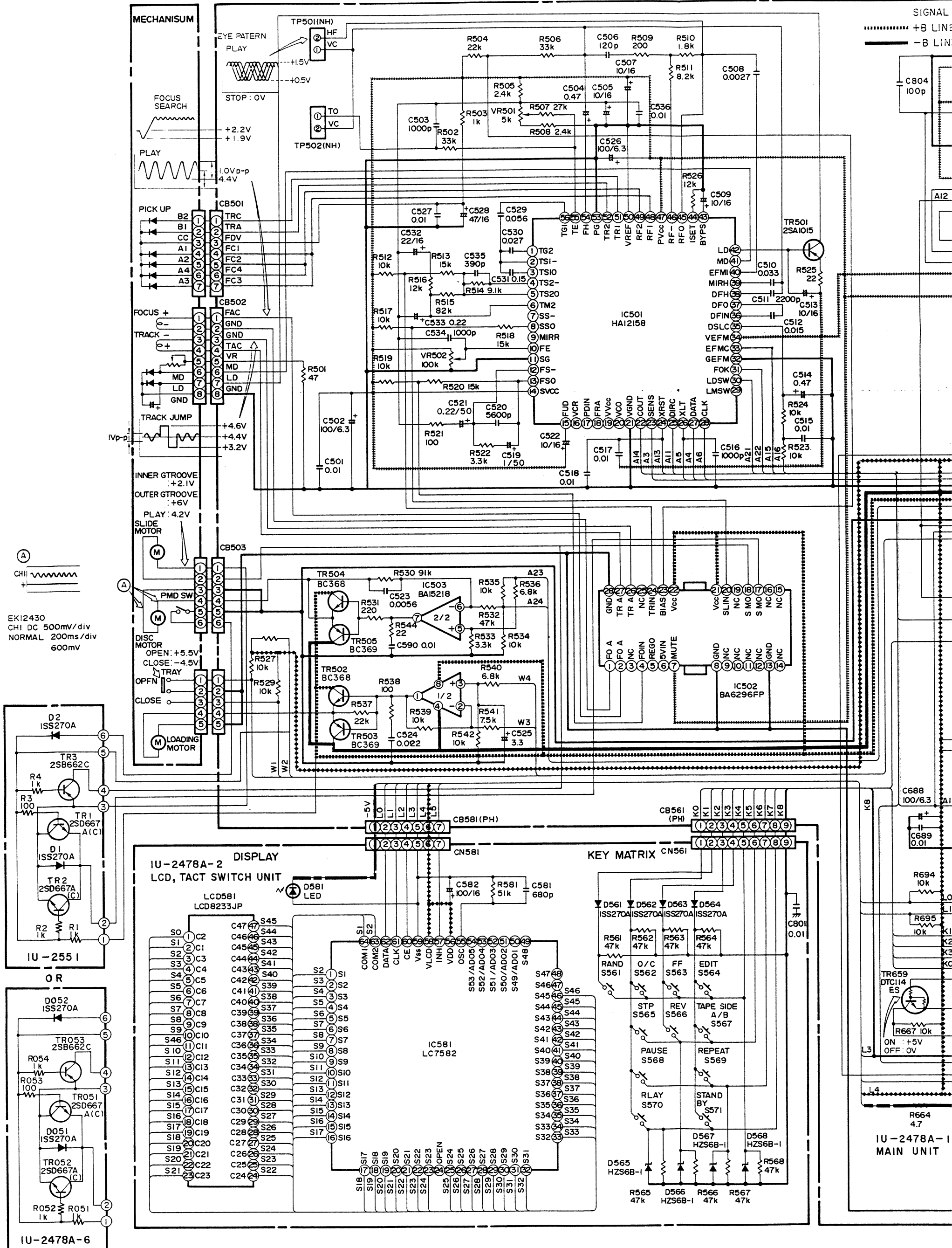
NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
COM1	—	COM	6	PAUSE	4	B	2	TRACK	A	C-	1f	1a	1b	2d	2a	2g	3d	3e	3a	3b	4e	4f	4b	M
COM2	COM	—	5	PLAY	3	TAPE	1	REMAIN	EDIT	1d	1e	1g	1c	2e	2f	2b	2c	3f	3g	3c	4d	4a	4g	4c

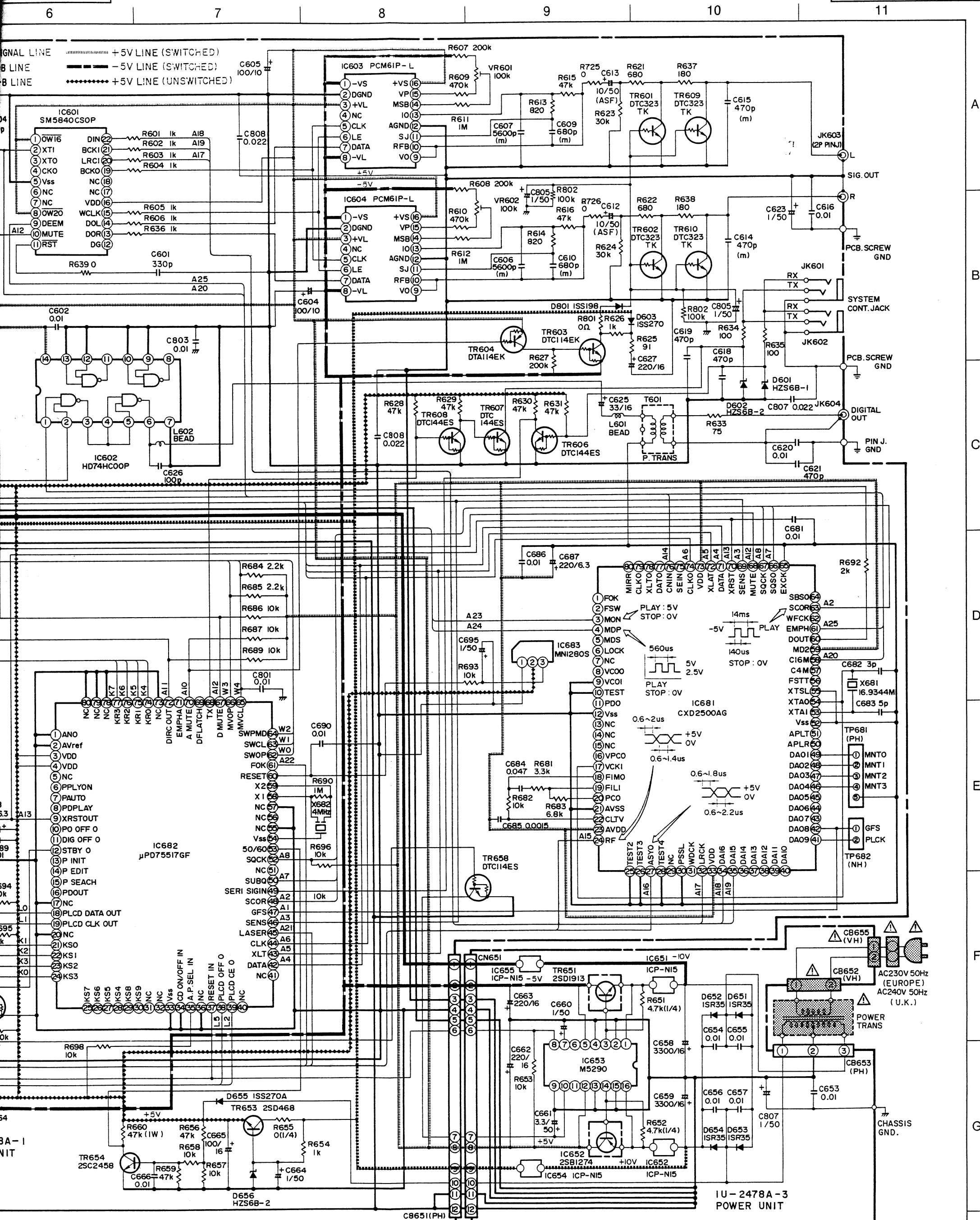
NO.	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
COM1	TOTAL	5e	5f	5a	5c	6f	6a	6b	17	B	DISC	IN	SINGLE	ARCS	RANDOM	AUTO	20	16	14	12	10	8	7b
COM2	PROGRAM	5d	5g	5b	6d	6e	6g	6c	S	A-	NO	REPEAT	18	OVER	REPLAY	OFF	19	15	13	11	9	7	7c

CD PLAYER SECTION

WIRING DIAGRAM





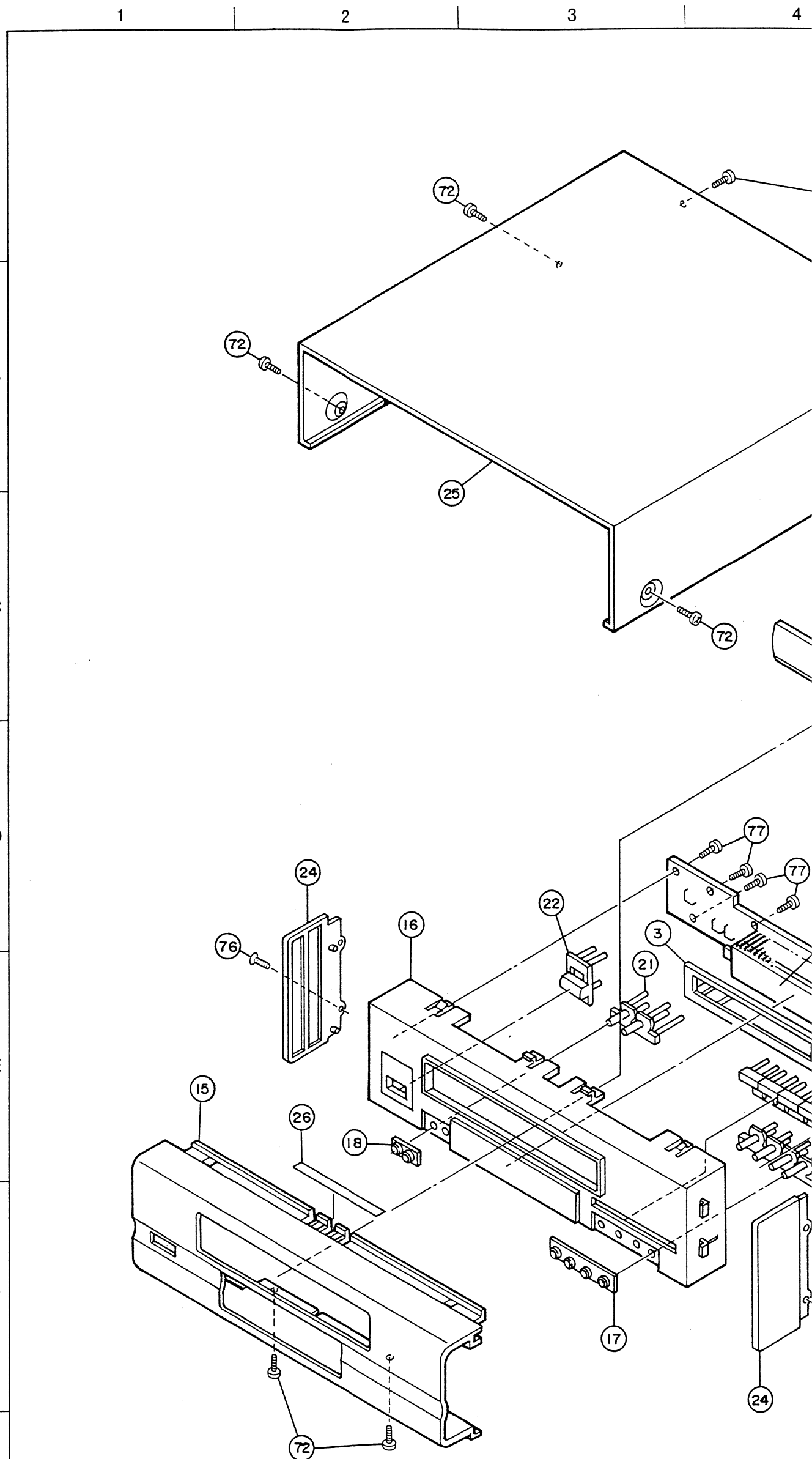


CD PLAYER SECTION

EXPLO

EXPLODED VIEW OF PARTS LIST

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	1U- 2478 A	P.W.Board Unit Assy		1S
1-1	—	Main Unit		(1)
1-2	—	LCD.Tact Switch Unit		(1)
1-3	—	Power Unit		(1)
1-4	—	Audio Unit		(1)
2	393 4141 003	LCD (8233JP)		1
3	449 0057 009	LCD Holder		1
4	—	—		
5	204 8413 000	2 P Pin Jack(C-GND)		1
6	204 8366 005	1 P Pin Jack		1
7	204 8421 005	Mini Jack		2
8	411 1184 332	Main Chassis		1
9	104 0237 201	Foot Assy		4
10	105 1044 221	Rear Panel	Europe model	1
10	105 1044 234	Rear Panel	U.K. model	1
11	412 2814 028	Card Spacer(L=10)		1
12	412 3548 005	P.W.B Catcher		2
13	449 0073 119	Mech. Holder		3
14	337 0017 018	CD Mech. Unit		1
15	144 2212 219	Front Panel		1
16	146 1402 217	Inner Panel Assy		1
17	146 1420 121	Knob Guide(Round)	4 Gang	1
18	146 1420 134	Knob Guide(Round)	2 Gang	1
19	113 1547 376	Push Knob(Play)	4 Gang	1
20	113 1549 044	Push Knob(Round)	4 Gang	1
21	113 1549 057	Push Knob(Round)	2 Gang	1
22	113 1460 013	Power Knob		1
23	146 1401 111	Loader Panel Assy		1
24	146 1411 211	Side Plate		2
25	102 0519 211	Top Cover		1
26	122 0183 007	Spacer	100X10X10.5	1
27	412 1965 004	P.C Support	L=24	1
28	409 0052 019	Holder(A)	L=33.6	1
29	412 3485 016	P.W.Bracket		2
30	513 9316 000	Rating Sheet	Europe model	1
30	513 9316 026	Rating Sheet	U.K. model	1
31	412 9337 003	Trans Bracket		1
32	412 2091 000	AC Cord W/ Conn.		1
33	412 0056 008	Cord Bush		1
34	513 2066 001	Laser Caution		1
35	253 6002 000	Power Trans.	Europe model	1
35	253 9651 005	Power Trans.	U.K. model	1
36	445 8004 007	Wire Clamper		1
37	—	—		
38	—	—		
39	513 0985 003	Inst. Label		1
40	204 2307 028	7 P PH-PH Conn. Cord	CC501	1
41	204 2306 032	8 P PH-PH Conn. Cord	CC502	1
SCREWS				
71	473 7002 018	Tapping Screw(S)3X8		11
72	473 7015 005	Tapping Screw(S)3X6	Black	19
73	473 7508 046	Tapping Screw(P)3X6		2
74	477 0064 107	Fixing Screw		2
75	473 7508 017	Tapping Screw(P)3X10	Black	3
76	473 7500 028	F.Tapping Screw(P)3X8		2
77	473 7505 007	Tapping Screw(P)2.6X8		9
78	473 7508 046	Tapping Screw(P)3X16		2
79	473 7004 003	Tapping Screw(S)4X8		2
80	—	—		
PACKING & ACCESSORIES (Not included EXPLODED VIEW)				
101	505 0241 005	Cabinet Cover		1
102	503 1062 106	Cushion		1
103	503 1061 000	Top Cushion		1
104	501 1657 007	Carton Case		1
105	—	—		

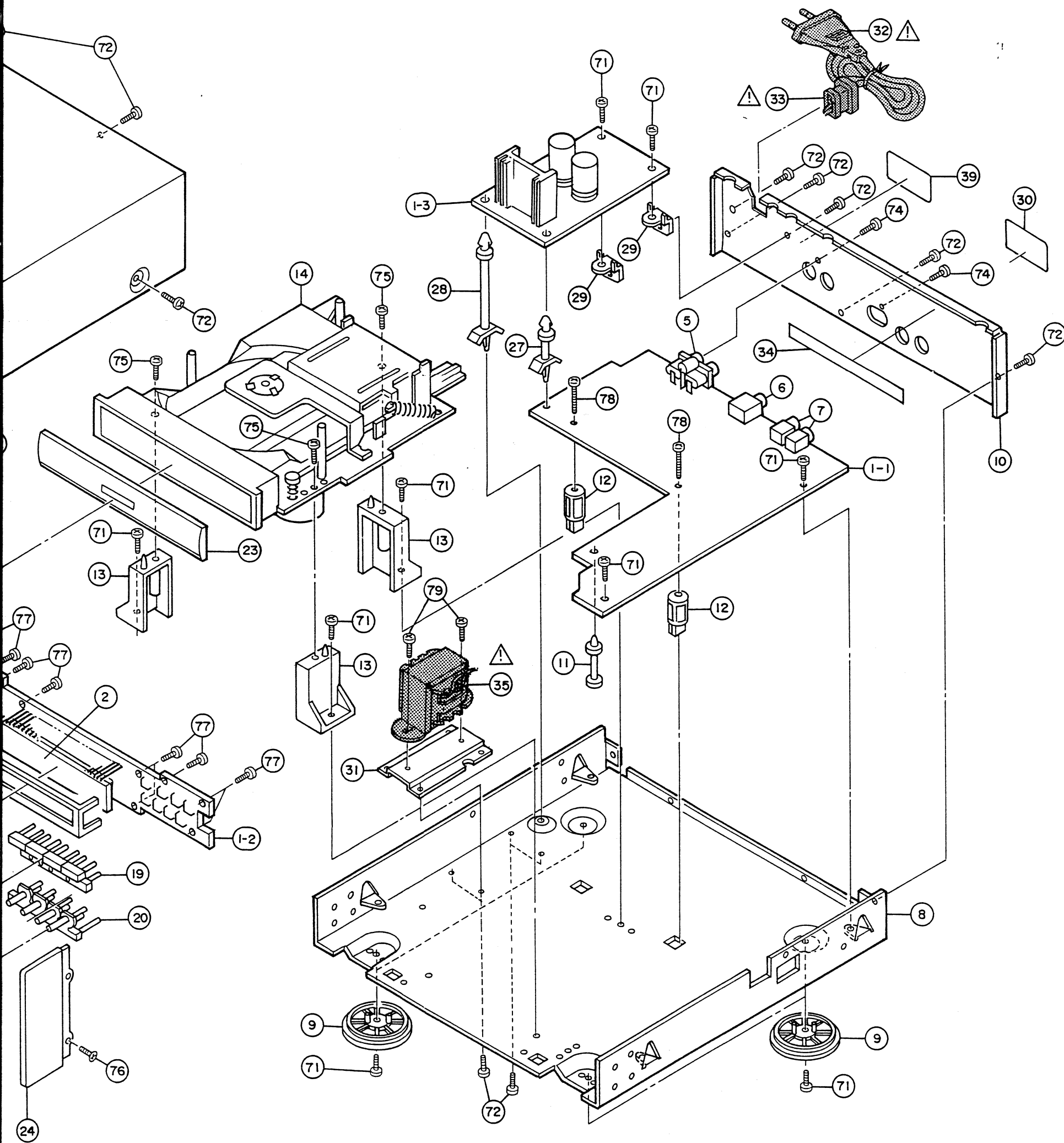


NOTE ON PARTS LIST

- Part indicated with the mark "●" are not always in stock and possibly to take a long period of time for supplying, or in some supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "1" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.

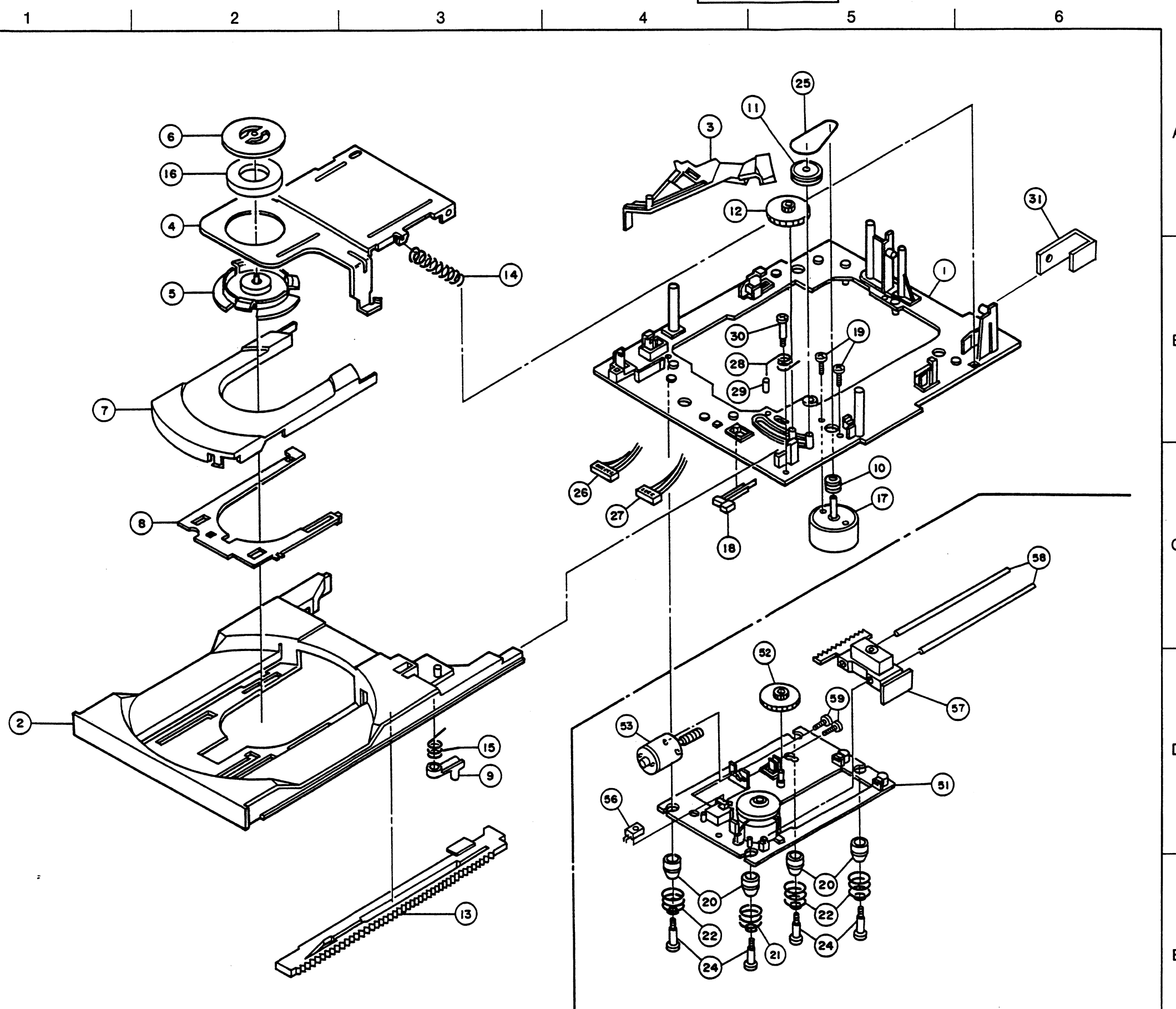
WARNING:

Parts marked with this symbol Δ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.



CD MECHANISM Part No.: 3370017005

CD PLAYER SECTION



CD MECHANISM PARTS LIST

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	9KA 81A2 95	Loading Plate Ass'y OS		1
1-1	—	Loading Plate		1
2	9KA 81G9 73	Tray 201		1
3	9KA 81G9 74	Switch Lever		1
4	9KA 81P4 62	Clamper Arm		1
5	9KA 81G9 75	Clamper		1
6	9KA 81P4 63	Clamper Plate		1
7	9KA 81G9 76	Disc Holder		1
8	9KA 81G9 77	Lifter Cam		1
9	9KA 81G9 78	Latch		1
10	9KA 81G2 35	Motor Pulley	Mold	1
11	9KA 81G1 22	Pulley Gear		1
12	9KA 81G1 23	Gear 3		1
13	9KA 81G5 81	Rack 11B		1
14	9KA 81S0 59	Clamp Spring		1
15	9KA 81S0 60	Latch Spring		1
16	9KA 82G0 57	Clamper Magnet		1
17	9KM 01T0 94	Motor	MDN-4RA3EZAS	1
18	9KS 01W0 51	Leaf Switch	LSC122338	1
19	9KM 20S0 04	Tams Screw	M2X4	2
20	9KA 82G0 56	Float Cushion M3		4
21	9KA 81S0 66	Float Spring M3A		1
22	9KA 81S0 67	Float Spring M3B		3
23	—	—		—
24	9KA 81H0 85	Fixing Screw C		4
25	9KA 82G1 80	Belt 1.4X18.1		1
26	9KA 82G1 23	Connector Cord	CNW6PM3	1
27	9KA 82G1 24	Connector Cord	CNW5PM3	1
28	9KA 81S0 71	Tray Spring 201		1
29	9KA 82G1 84	UL Tube 2X5.5		1
30	9KA 82H0 35	Floater Screw RM		1
31	—	—		—
32	—	—		—
51	9KA 81A3 33	Spindle Motor (T/T) Ass'y	Including Motor, T/T	1
51-1	—	Unit Plate M3G2		1
52	9KA 81G9 66	Slide Gear T		1
53	9KA 81A2 90	Feed Motor Ass'y		1
53-1	—	F. Motor	RD-050Y	1
53-2	—	Warm Gear T		1
54	9KA 81A2 93	Turn Table Ass'y		1
54-1	—	Turn Table Plate		1
55	9KM 01T0 94	Motor	MDN-4RA3EZAS	1
56	9KS 01W0 56	Switch	SW-SPPB-11	1
57	9KA 81G7 49	Pickup M3	HOPM3TR	1
58	9KA 81H1 07	Guide Bar		2
59	9KM 20N0 03	Pan Screw	M2X3	4
60	—	—		—
61	—	—		—
62	—	—		—